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MISS MARY ANDERSON AS PARTHENIA.





# \* THE CAMERA \*

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## PHOTOGRAPHY AND ASTRONOMY.

BY R. A. PROCTOR.



IF any one had suggested to Hipparchus, when he was making his small catalogue of stars, that one day those brighter among the visible stars might be made to record their own places in a star chart, he would have regarded the thought as too pleasing to be entertained. Had any one suggested that not only those stars, but all orbs which can be seen even by the keenest eye on the darkest and clearest night, might be pictured by their own rays in a series of maps, he could not but have rejected the fancy as the wildest dream, as fanciful an imagination as though one should suggest that the sands on the sea-shore might be numbered. Half a century ago, nay even later, astronomers would scarcely have imagined any such achievement to be possible, even though the art of photography had begun to show the resources it possesses. But even ten years ago, I doubt if any astronomer, though the moon and sun had been successfully photographed, and many star fields of great interest had been mapped by their own rays, would have dared to hope for such successes as have been recently achieved, or for the work which, though not as yet achieved, we now see to be possible in the near future.

It is not merely that photography has shown all the stars visible to human vision in the field which its own much farther ranging eye has surveyed, or even that it shows all the stars which the telescope with which its powers have

been associated, will reveal; but that it shows and permanently maps, stars and other objects, which that telescope refuses to show to unaided human vision. What can be more wonderful, what more promising for the future of science, than the thought that we can now attach to the telescope an eye so sensitive and so retentive that while it greatly increases the effective powers of the telescope itself, it keeps the record of all it sees, perfect in every detail, and available through all future ages for study and comparison?

Consider for example such charts as those in which Argelander and his assistants recorded their survey-work in the northern heavens with a  $2\frac{1}{2}$ -inch telescope. Here we have the work of several observers, extending over five or six years, pursued under varying conditions, involving great labour, and yet only showing a portion of the stars within the range of the small telescope employed—in all 324,000 stars in the northern heavens, corresponding to about two-thirds of a million of stars in the whole star sphere. Photography comes in and shows, with much less relative labour, a thoroughly trustworthy record of the heavens, showing fifteen millions of stars over the star sphere—each field, two or three degrees long by as many broad being taken at a single photographic view, so that the true relative brightness of each star is correctly shown. In a map taken from a rich field in the constellation Cygnus, in *Knowledge*, some 1,200 stars can be counted, all shown with their true relative brightness, and all engraved (practically) by their own light, without even retouching by human hand.

But more marvellous than the mere delineation



of myriads of faint stars, is the actual portraying of delicate star clouds, which are not only invisible by the eye applied to the very telescope by which they have been photographed, but may even be invisible with any telescope man can ever make. (For it is to be noticed that increase of telescopic power can never increase the apparent luminosity of faintly luminous surfaces; nay the very reverse happens, insomuch that—for example—the tail of a large comet can be traced farther with the eye than with a telescope, and farther with a small telescope than with a large one.) The stellar photographs of MM. Prosper and Paul Henry have already been rewarded by a very remarkable

interest. For while not one in a thousand is willing (or perhaps able) to follow the reasoning by which I had shown long since that nebulosities in the heavens lie in reality at stellar distances and are not remote clustering groups of stars, no one can look at Fig. 1 without feeling that the nebulous wisps extending from Maia are really connected with that well-known member of the Pleiades group.

Photography also discloses the nebulous region around the star Merope in the Pleiades, which had been observed by M. Tempel at Marseilles, in 1860, but had been treated somewhat disdainfully by astronomers,—unwilling as they were to regard the Pleiades as infested by

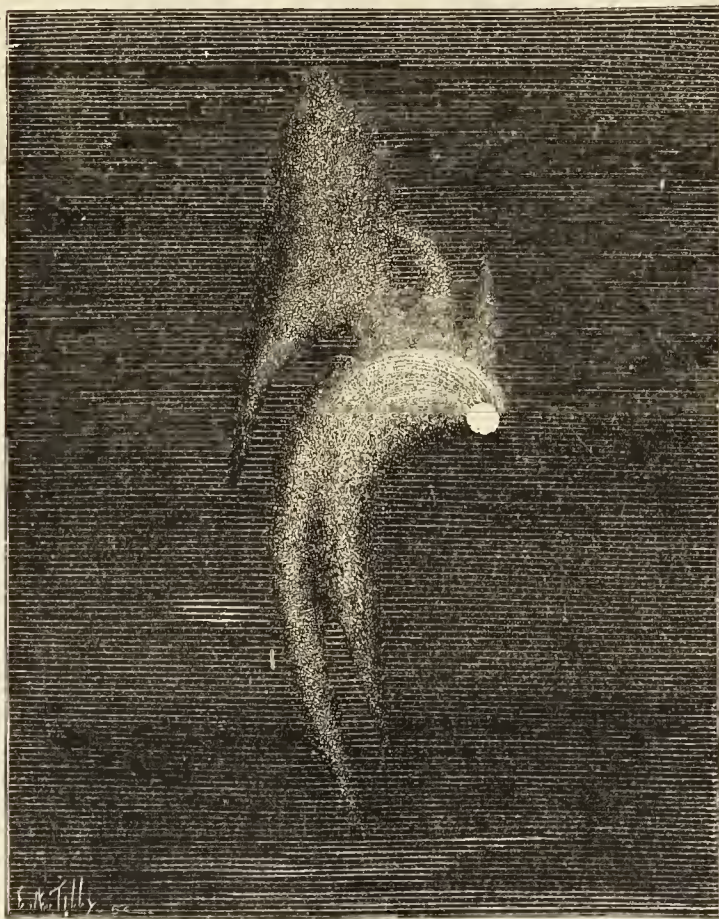


Fig. 1.—Nebulosity around the star Maia in the Pleiades,—discovered by photography.

success in this direction. In Fig. 1 we have a photographic view of a curious nebulous object in the Pleiades. The star from which the nebulous streaks extend is Maia, one of the seven Pleiads, and although many telescopes of great power had been directed to this interesting group of stars, no nebulosity had been discovered, where the photographic eye has not only seen but drawn a well-defined nebulous object with all its peculiarities of form and texture.

In this case photography has not only revealed an object before unknown, but has given emphatic evidence on a cosmical problem of extreme

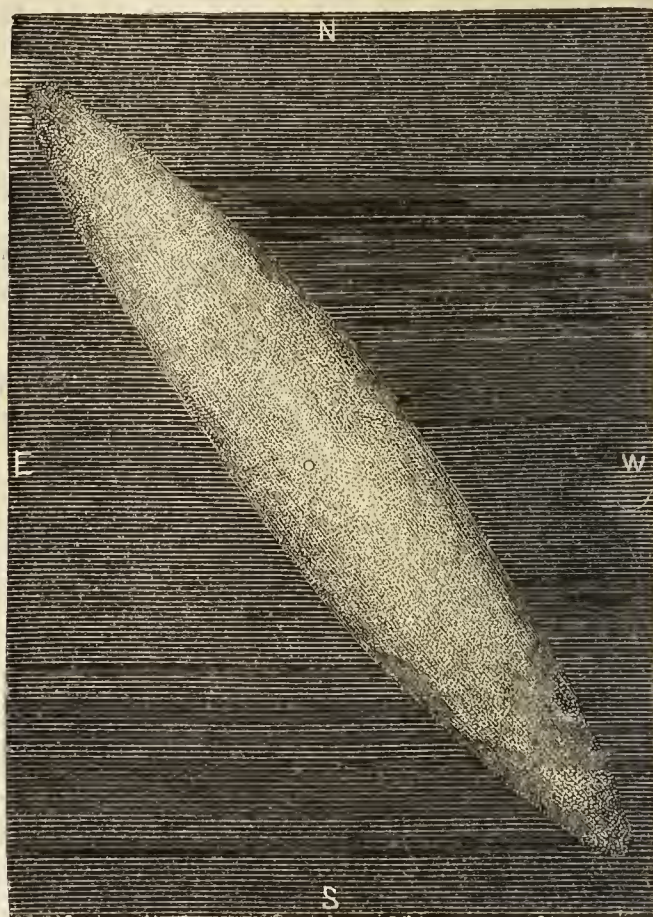


Fig. 2.—The Great Nebula in Andromeda—known two centuries ago as “The Transcendently Beautiful Queen of the Nebulæ.”

nebulous matter, altogether unlike the scattered stars in the midst of which it is strewn and with many of which it is manifestly associated.

We may say that photography has here revealed the interesting fact that while there are regions of our galaxy in which large nebulous masses are interspersed with discrete stars, so are there others in which clustering aggregations of discrete stars are interspersed with nebular clouds—billions of cubic miles in extent.

Another interesting example of the light which photography may throw on astronomical problems



of interest is afforded by the Andromeda nebula. In this fine object, apparently a cloud of veritable star dust, a bright star (bright, that is, in the telescopic sense) shone out last August. A photographic view of the nebula had already been secured by Mr. Common, and from this it was clear that the star had not been in the nebula a few weeks before it was seen in the telescope. The true position of the temporary star in the midst of the star-cloud is clearly shown in later photographs. (Fig. 2 presents the actual aspect of the nebula.) Hereafter we may be sure that multiplied photographs of this and other nebulae, will render all doubt as to the reality and extent of changes in the nebulae impossible.



Fig. 3.—Photograph of a Solar Spot.

Even more wonderful than the photographic recording of star-groups and star-clouds, is the work photography is doing and is about to do in determining and recording the actual condition of the suns which people space. When we hear of a scheme by which, within a few years, all the stars in the heavens down to the eighth magnitude, will be made to record their spectra, —in other words to tell us what they are made of and in what state they are—we feel almost appalled at the daring of the modern astronomer. The waves which travel through space from hundreds of thousands of stars, are bidden

to flow in on the shore-lines he has prepared for them, and there to tell the history of the far-off shores from which they started. And they obey.

But if the records obtained by availing ourselves of the sensitiveness of the photographic eye, and its power of seeing more and more by long-continued gazing, are wonderful, not less wonderful are those which are obtained by utilising the power of that selfsame eye to see and record what it sees, in a moment of time so short that the human eye, no matter how aided by telescopic power, could see nothing in it. Thus have the solar photographs been obtained by which the true structure of the sun's surface may be said to have been revealed,—for before astronomers could not agree as to what they saw, so seriously did atmospheric disturbances affect their slower vision. Of this class of photographic work we have an example in Fig. 3.

But I might add marvel to marvel, I might name promise after promise, which the recent progress of photography, as applied to the heavenly depths, has suggested, till a hundred of these pages had been filled. And even now, though photography has fully taken possession of this field, she has but begun to work it. Consider what she has done, for example, in the way of lunar photography, and what may be hoped hereafter, as the sensitiveness of our plates is increased, and instruments of constantly-increasing power and accuracy of definition are made. We see that all the labours of past students of the moon, even those of the indefatigable Schmidt, cannot tell us so much about our satellite as we shall hereafter learn through photography. It will be the same in every department of astronomical research, even in the exactest and most exacting work of astronomical measurement.

## PHOTOGRAPHY IN ITS RELATION TO ARTISTIC REPRODUCTION.

BY J. S. HODSON.



IN the first introduction of any nostrum, it is usual to declare it to be the long-looked-for panacea for all the ills to which flesh is heir; just as every fresh discovery in the vast field of science is pronounced to be the most valuable addition to the magic arts, having the power to perform automatically that which mankind had previously but imperfectly accomplished by an enormous expenditure of personal labour and patience. Photography has not proved any exception to this rule, and enthusiasts in the science have fondly imagined that, because by its means



everything about us can be presented to the eye in a picture, therefore the necessity for the intervention of the artist no longer exists. The term "enthusiast in photography" is comprehensive, as it includes nearly every one who has practised the science, for we all (in the first flush of delight caused by the unfolding of the wonders of photography) pass through the peculiar mental condition of excessive zeal, as naturally and inevitably as we in our childhood accept measles and scarlet-fever. Progressing to a higher acquaintance with the science, we learn more accurately to gauge its limits and proportions, and to moderate our first crude ideas of its inherent capabilities and advantages.

The objection often urged by painters against the reproduction of their designs by the engraver has always been based upon the danger which was necessarily incurred of losing a portion, more or less considerable, of the artist's intention, or, what is worse still, of giving a distorted image of his design. The employment of a separate and distinct medium through which the teaching of the artist should be presented and popularised, is manifestly attended with the possible risk of missing the point or effect of the original. Even where the engraver, sinking his own individuality, uses his best endeavours to transcribe the original faithfully, the effect is not always such as completely to satisfy the critical judgment of the artist; but when the engraver takes upon himself the task of "improving" the original, no surprise need be entertained should the complacency of the engraver not be equally shared by the designer of the picture.

The photographic enthusiast, fully recognising the justness of the artist's strictures upon the work of the engraver, believes his camera to be the remedy for this and all other artistic difficulties; and in the exuberance of his zeal for the credit of his newly-acquired science, boldly asserts that, because effective photographic pictures can be taken from nature direct, therefore the work of the artist may, indeed, be dispensed with altogether. The other extreme phase of opinion is thus reached; and, instead of cultivating the assistance of the artist and taking advantage of the result of his special ability and training, the photographer has in many cases succeeded in exciting an unwise antagonism in the mind of the artist which, in its effects, cannot fail to recoil upon himself. The natural result of the separation of interest between artist and photographer thus effected has been that, relying too much upon the marvellous development of detail which the science affords, the work of the photographer becomes, for the most part, hard and formal in effect, and wanting in *verve*. The technical training of the eye, if not of the hand, of the

artist, must prove of the utmost advantage to the photographer in guiding him to the choice of effective landscape studies, as well as by helping him in the judicious "composition" of figure subjects.

Convinced, possibly against his will, of the truth of this view of the limitation of the value of the science when divorced from artistic guidance, the photographer is apt to fall back with considerable complacency upon the evidences of his attainments in the department of portraiture; fondly believing that, if not positively immaculate in this branch of art production, it is, at least, his strong point, particularly while enjoying the increased advantage offered by the employment of highly-sensitised plates for instantaneous pictures. That he is not uniformly successful is, nevertheless, patent to all, and hence the frequently-expressed opinion that it is not every face which lends itself kindly to photographic portraiture. It cannot be denied, indeed, that the perfection of photographic portraiture is almost as much dependent upon the exercise of artistic skill as is the older form of artistic portraiture; and, until this fact be practically acknowledged, the highest form of excellence will not be uniformly reached by this style of automatic portraiture.

To illustrate this by actual examples of the procedure of the two descriptions of work. The photographer poses his "sitter" according to his own notions of effect, and selects such modifications of profile or full-face as he considers best suited to the contour of his subject. The result will undoubtedly show the features correctly portrayed; and should the character of the face depend upon distinctively-marked features, a satisfactory and easily-recognisable likeness will be produced. Where, however, the expression—or soul—of the countenance, rather than the outline of feature, forms the peculiar characteristic of the face, great diversity of opinion will exist as to the value of the portrait as a likeness. The sitter, having been posed before the camera, with the head in the inevitable vice as a safeguard against every tendency to move, finds himself in a constrained position of mind as well as body. The very terms of the instruction by the photographic operator to the victim—"Now, quite still, if you please!"—however blandly conveyed, conduces to the introduction of a hard, stony look into the face of any one who has not acquired by previous habit the absolute command of facial expression. For this reason it is that the best examples of photographic portraiture will be found to be likenesses of actors and actresses, because the necessity for studying the art of assuming varieties of expression indicative of



the various emotions of the mind, which is inseparable from the occupation of an intelligent dramatic artist, enables the sitter to assume the precise facial expression essential to a "speaking likeness."

The procedure of the painter, on the other hand, is different in many respects. Not unfrequently he occupies the time of one, or it may be two, sittings in the vain endeavour to induce the sitter to discharge from his countenance the blank look which the nervous consciousness of being "on view" naturally produces, until subsequently, by judicious conversation and "drawing out," he touches upon some sympathetic topic which evokes enthusiasm, and lights up the features with an expression which, cleverly seized, gives character and animation to the portrait.

If the photographer could acquire, by artistic training, the knowledge which is so useful in manipulating a sitter for artistic portraiture, the chief objection to this branch of photographic art would be removed, and results would be obtainable as nearly approaching perfection as it is possible to conceive. The value of the advantage of the highly-sensitized plates employed in instantaneous photography can scarcely be overestimated, as by this means the amount of fatigue to the sitter is greatly reduced.

There is another phase of photography which is also of immense advantage to the painter who essays the portrayal of figure subjects as well as that higher description of artistic production which comprises historical pictures. Although the employment of living professional models is resorted to by artists, and is essential to the production of works of superior character, yet it is acknowledged to be a tedious practice, fatiguing alike to artist as well as model. The task of adopting and retaining for a considerable time any particular posture is physically exhausting even to the practised model, and in the case of heroic pictures necessitates a training only second to that of an athlete. By the employment of photography (and especially of instantaneous photography) an entire series of photographic images, sufficient to afford the artist ample material possibly for the composition of his picture, may be taken from a model in the course of one comparatively short interview and without any perceptible fatigue. Where the subject in hand may happen to require it, two or more models may be grouped in the desired positions. In these cases, the artist and photographer, working harmoniously together, mutually assist each other in the production of results that, while they are emphatically true to nature, have at the same time so much of the artistic element in their composition as to meet the appreciation

of cultivated minds. On the other hand, when the photographer works alone, and does not happen to possess artistic feeling, a certain stagey appearance is apt to be observable in the pose of the figure, as well as some degree of artificiality in the disposition of the accessories.

It is scarcely possible to attach too much importance to the assertion that photography cannot be accepted as rivalling, or in any legitimate sense superseding, the work of the artist, but should, on the contrary, be hailed as a most valuable ally. Indeed, the best photographic results are those which are obtained by the joint exertions of artist and photographer, or where the two characteristics may happily be combined in the same individual. For book illustrations in which elaborate detail is the essential of the picture—such as architectural subjects, for instance—the genius of photography lends itself admirably, because the minute particulars, so easily obtainable by means of the camera, would entail great difficulty to the artist, particularly if a diminutive scale has to be adopted, and would involve an unnecessary waste of labour. In subjects, however, demanding concentrated expression of mind, recourse must be had to the skill of the artist in the first instance, although the design may afterwards be reproduced by means of photography. It will frequently be found that in the work of the artist those subjects will be pronounced to be most successful in which the painter has not been mathematically true to nature; but where, on the contrary, the salient points of the design are emphasized almost to the verge of caricature. The successful photographer will recognise that the peculiar genius of his science consists in the exact reproduction of the most minute detail, while upon the artist we must rely for the exhibition of that almost indescribable charm which, for want of a better term, we agree to designate "artistic feeling."

Having pointed out in this paper the necessity for the photographer to make himself acquainted with the theory, at least, of the work of the artist, in a second paper it will be shown that theoretical photography is equally necessary to the artist.

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A NEW REDUCER FOR DENSE NEGATIVES.—Mr. Robinson, son of the well-known photographic artist of Tunbridge Wells, has brought out a new reducer, which photographers generally—and especially amateurs—will be glad to know of. A certain means of thinning an over-dense negative is a thing much wanted, and we hear that this preparation will do what is required without any risk of spoiling the film to which it is applied.



## The Tourist.

### CAMERA NOTES IN NORWAY.—I.

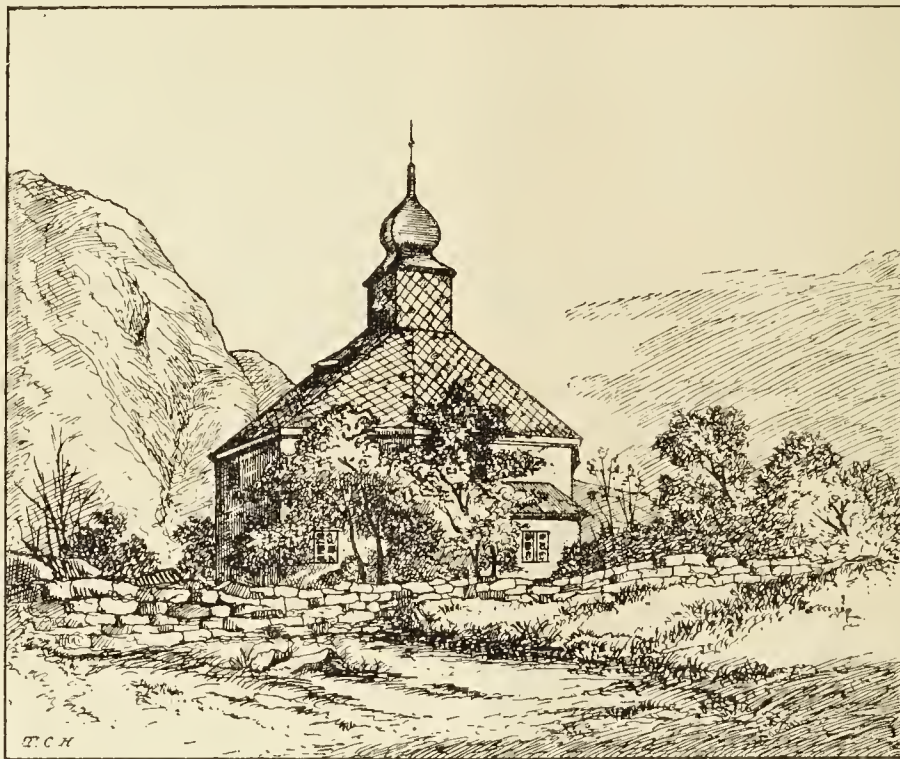
BY T. HEATH JOYCE.



CAMERA, nowadays, is a common adjunct to a tourist's paraphernalia, and the knight of the sun is to be met with in all climes and all lands. Nothing is sacred from his enter-

prise, and so accustomed have we become to his energy, that we read with equal equanimity that the shadow on Adam's Peak—one of the wonders of Ceylon (the spectre of the Brocken will surely be the next subject)—that the most inaccessible heights of the Alps, that a giraffe-hunt in Southern Africa, that the interior of the far-famed Taj Mahal of Lahore, or the midnight sun as viewed from the North Cape, have all been portrayed on the sensitive film with startling accuracy. Indeed, wherever you go, the indefatigable photographer is to be found—he

may be seen in the Tuileries Gardens with a humble scenograph, or attempting an ambitious panorama of the Bernese Alps with a marvelously and wonderfully made apparatus. Here it may be said that many tourist-photographers make a great mistake in taking too large a camera with them. A Brobdingnagian camera needs equally cumbersome appendages, and if glass plates are taken, the amount of impedimenta becomes a serious consideration, particularly when out-of-the-way districts have to be visited, where springed vehicles and turnpike roads are unknown, and porters and ponies are willing, but rough. For all ordinary work, a  $7\frac{1}{2} \times 5$  camera will be found amply sufficient, while in many cases a  $5 \times 4$  will suffice.



Church at Veblungsnæs, Romsdal Valley. (See page 8.)

On the whole, the former is preferable, as in distant views the greater length in comparison with the height saves much waste foreground, while with a reversing frame, height can be obtained if desired. Good negatives will always enlarge; and, moreover, with a little judicious treatment, can be considerably improved for enlargement. Large negatives also are subjected to far greater proportionate risk in transport. The writer had a sad experience of this in Norway last year, when a journey on pony-back, across a mountain pass, ruined a whole batch of plates, while an enthusiastic friend, who had photographed the length and breadth of Scandinavia, had a whole packing-case of undeveloped plates shattered to atoms by the breaking of a rope. They were being lowered

from the steamer to a lighter, but the rope gave way under the great strain to which it was subjected. Of course, if paper negatives eventually come into universal favour—as at present they bid fair to do—such a catastrophe as this would be rendered impossible. To return, for a moment, to the question of development. I hold that every photographer should develop—aye, and more

than that, take a test proof of—every plate as he goes on. It is all very well to make careful notes in a book of the time and length of exposure, but the curious variations of the actinic power of the air in different districts have to be considered, and it is impossible to jot down all the local conditions under which a batch of plates has been taken until they have been fairly tested by the development of several of the negatives. Many photographers have an inherent fear of developing under any but perfect circumstances. All the writer can say is that he and others have constantly developed with merely a sheet of non-actinic paper wrapped round a candle, or a railway reading-lamp, causing a reflection from the ceiling enough to frighten the most venturesome



spirit; and yet, strange to say, have never fogged a plate under these conditions. The greatest drawback to development abroad is the gentle and sparing manner in which mine host metes out water to his guests; but by careful economy, and a reasonable amount of tender politeness to the abigail in waiting, even this difficulty may be overcome. As for the printing, a proof can easily be taken on the blue ferro-prussiate paper, which needs no toning, but merely a little washing to bring out the image.

To turn to the titular theme of my article. A Norwegian trip is one of the finest imaginable for the photographer. With the exception of one or two districts—such, for instance, as the Hardanger—the country is not tourist-ridden, while at every turn there is a rich wealth of every kind of subject for a picture—mountains, ravines, trim villas, picturesque farm-homesteads, dense pine-clad forests, glittering glaciers, quaint steeped churches, homely peasants and rugged sea-dogs (thorough descendants of the Vikings of old)—all present marvellous fields for the enterprise of photographers.

During the last few years, it is true, several professionals and many amateurs have taken the camera along the best-frequented routes; but little or nothing has been done in the more out-of-the-way corners, and there is little fear of the ground being worked over for many a year to come. To amateurs, Norway is an especially happy hunting-ground, as the constantly-varying conditions of light, from the brightly-illuminated plain to the almost styx-like gloom of the ravine, together with the enormous range of subject, cannot fail to endow him with invaluable practical experience. To the professional, the ever-changing scene, and the wealth of material upon which to exercise his skill, must afford yet greater delight.

Moreover, there is one great comfort to the photographer in Norway. He is never interfered with. Even in a populous town he will be

in no way incommoded, and the natives will only be too delighted to act as models. I was once accosted in an out-of-the-way village by a rough-looking man, who, with a grin of recognition, held out his hand. I could not, for the life of me, recollect his face, until he reminded me that he had stood among a crowd in a station on the Dovrefjeld, at which I had taken a passing shot the previous year. The good folk at the post-stations are only too pleased to offer any assistance in providing the darkest room or corner in their house for developing purposes; but, as every room is studded with windows which are provided with neither shutters nor curtains, this is a rather difficult matter, and the unhappy photographer is frequently compelled to resort to a dark, dank cellar; for be it remembered

that in the summer season there is no night in Norway. Indeed, one of my best photographs was taken at 11 p.m. with an horizon as rubicund as Bardolph's nose. Sometimes I have developed underneath the table, all light being excluded by hanging over it the "sengteppe," or thick-wadded coverlid which is provided on every bed. After a few minutes,



Church at Söholt, near Aalesund. (See page 8.)

however, the atmosphere becomes perfectly torrid, so I find the best plan is to select the darkest corner of the room, and nail the "sengteppe" across it, thus making a species of three-cornered tent, which might be covered by an umbrella. If, therefore, the developing-tray be shaded with a piece of newspaper or cardboard until the image appears, there need not be any fear of fog. A capital and exceedingly portable travelling tourist tent, however, may be easily made at home with a few yards of velveteen gathered together in a point, and attached to a circular disc of cardboard about 6 inches in diameter. This is thrown over the camera-stand, the legs of which are folded double, and placed upon a table, so as to make a complete covering for the head and shoulders, and to afford space for the developing-dish and chemicals. The light



is conveyed through a cutting in the velvet, covered with a double layer of non-actinic tissue. Plates can be changed in full sunlight with this contrivance. The most handy developer in my experience for tourist work is Edwards' glycerine formula, doubly concentrated for the sake of portability. If judiciously used, a great amount of latitude can be obtained, the only drawback being a somewhat disagreeable tendency towards air-bubbles. Moreover, the increased density of the solution seems in some way to act as a preventive against fog when perfect immunity from light is not to be obtained. If a little more density is required in a negative than is afforded by the ordinary formula, a pinch of pyro will effect all that is wanted, while the ammonia solution gives every facility for controlling the rapidity of the development. Many a professional may think that I am laying an undue stress upon portability, but in out-of-the-way travelling every surplus ounce may prove the last straw which will break the back of success.

To return to Norway, however. A cariole is the ordinary means of locomotion when driving up country, and which affords the tourist every facility for carrying his apparatus. As he only takes this vehicle from station to station, he can thus decide to drive through the most uninteresting districts and to tramp through those which give promise of good subjects. Moreover, as the cariole is completely under his own control, he can stop when it pleases him, and the boy who accompanies him is never averse to halting for a quarter of an hour or so, as he is generally very pleased to give his pony a rest. As I have said, there is an enormous variety of material for the photographer; but there is one class of subject in which he must not expect to find anything especially remarkable in Norway—architecture. Even in the big towns—Bergen, perhaps, excepted, which was so long under the German sway of the Hanseatic League as to have become architecturally Teutonic—the houses are mainly of wood, and are monotonous in style—mere dove-coloured parallelograms, with ordinary sloping roofs, as far removed from the charming Swiss chalet as Primrose Hill is from the Jungfrau. There is more variety in the churches, which may mainly be divided into two types, shown in the illustrations. The octagonal building is a church at Veblungsnes, the entrance to the far-famed Romsdal Valley, and certainly possesses some original characteristics. The other, photographed at Söholt, near Aalesund, is the ordinary style of church found throughout Norway. There are plenty of picturesque farm-houses, however, and quaint little hamlets lying about almost lost in

mountain nooks; but, Thronthjem Cathedral excepted, there are no grand architectural historical monuments, such as may be found in almost every other European country. The photographer will have to deal with Dame Nature in Norway. But she does not fail to afford ample compensation for the lack of artificial attractions; indeed, it is the almost entire absence of artificiality throughout that renders a tour in Norway so refreshing, when compared with the tourist-ridden and hotel-haunted resorts of the continent. In a future paper, I propose to deal more categorically with some of the chief scenic attractions of the Land of the Vikings—that is to say, from a tourist-photographer's point of view.

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## PYROGALLIC DEVELOPMENT.

BY WILLIAM BROOKS.



**P**YROGALLIC acid as a developer remains unsurpassed, either in its old form, with the addition of citric acid and silver nitrate, or as the more modern alkaline pyro developer. The former is now very seldom employed, and there are, I have no doubt, many thousands of amateur photographers who have never used any but the alkaline form of developer.

I have used nearly every form of alkaline developer, but, on the whole, much prefer the one that I have adopted for the past four years, as I have found it to agree with all the market plates, and it gives, in my estimation, the most admirable results, both as regards its action and the quality of the resulting image. For many years I used the developer recommended by Messrs. Wratten & Wainwright with their instantaneous plates, which worked well, but was somewhat tedious and slow; it is what may be termed a weak alkaline developer. At the time of its introduction, alkaline development was but very little understood. I am of opinion that many do not at the present time understand the proper use of pyrogalllic acid as a developer, and through not understanding its use fall into no end of blunders, and produce anything but satisfactory results, as I will point out in this article. Of late, the fixed alkalies have been introduced in place of the volatile alkali ammonia. I have not seen results produced with the fixed alkalies—viz., the carbonates of soda and potash, either separately or in combination—that will approach the quality given by fugitive ammonia. The volatile property of ammonia has never been an obstacle in my practice, although so much has been said



and written against it. Liquor ammonia, to keep it in good condition, requires to be kept in a cool place, and out of the light, as I have found that if a bottle is placed where a strong light falls upon it, it soon loses its strength, whereas, if kept cool and in the shade, it lasts almost indefinitely without any apparent change. To produce the best results, I never use the mixed solution of ammonia and bromide more than a week old, as there is some action set up between the two which seems to retard the action of the developer very much indeed, and the resulting image is poor. The developer that I use is what may be termed a strong one, although, strong as it may appear, it is perfectly under control. I prefer to make it up in two solutions, thus :—

## SOLUTION P.

Pyrogallic acid .....	2 grains.
Sodic sulphite .....	8 „
Citric acid .....	$\frac{1}{4}$ „
Water .....	1 ounce.

## SOLUTION A.

Liquor ammonia, 880° .....	20 minims.
Ammonium bromide .....	6 grains.
Water .....	1 ounce.

I give the above in one-ounce form, so that it can be multiplied and made up to the quantity required. In hot weather I dispense with the soda sulphite, for I find that if the plates show the slightest tendency to green fog, the evil is greatly intensified, so I do away with its use; in cold weather it is of great service. To prepare the developer, pour into the developing measure one and a half-ounces of solution P, and in a separate measure half an ounce of solution A. If the exposure is known to have been correct, both solutions can be at once mixed and poured over the plate, without any previous soaking (this quantity will be about sufficient for, say, a 5 x 4 plate; for larger sizes increase solution P, keeping A the same); but, if the exposure is not known, one must proceed very cautiously, by only adding about one drachm of solution A to commence with, and the remainder as development proceeds. Should the image appear to be getting too intense before sufficient detail is acquired, pour the developer back into the measure and dilute with an equal bulk of water—or even more if the plate be very much under-exposed and develop slowly—and it is surprising the amount of detail that can be obtained. If the plate has been over-exposed, and the image appears to be coming out too fast without gaining intensity, it must be delayed by dropping into the developing measure three or four drops or more of a ten-grain solution of citric acid, and pouring back the developer from the plate; this neutralises a part of the ammonia, forming

ammonia citrate, which is a most powerful restrainer, and will almost stop development; when this takes place, solution A can be added cautiously, when development will proceed, and the image gain in strength. The quantity of pyrogallic in the developer is very important. In the early days of alkaline development, I have known able workers to recommend as much as twelve grains to the ounce; this is a great mistake, for if too much pyro be used there is a thickening and blocking-up of the shadows, and I believe there are thousands of negatives spoiled from this cause. I have never seen this alluded to before; it is more apparent in developing a collodio emulsion plate than a gelatine plate. I have found, too, that if an attempt is made to develop a collodion transparency with ten or twelve grains of pyrogallic acid to the ounce, however well restrained, before the image is well out it begins to fog, no matter how intense the high-lights are in the negative; and the more the pyro is increased, the worse it is; but if the quantity of pyro is reduced to one or two grains to the ounce, a most brilliant image is obtained. In gelatine negatives this action is not so marked, as a more powerful developer can be used on such a film. I consider the quantity of pyro given in the above formula is ample to produce plenty of intensity in the high lights, and very clear shadows; but if the pyrogallic acid be injudiciously used with the view of gaining intensity, a general blocking-up of the shadows will occur, with a thickening of the half-tones, giving a print looking very flat and poor, and without gradation.

A short time since I made numerous experiments to see how much pyro was actually required, and I found that a plate could be developed satisfactorily with only one grain of pyro to the ounce, provided the correct exposure was given; this I tried on several samples of plates, with the same results.

## HOW TO AVOID SNARES AND PITFALLS IN PHOTOGRAPHY.

BY DR. G. LINDSAY JOHNSON.



I HAVE chosen this subject in preference to one bearing upon the science of photography, because all practically interested in photography will shortly be as busy as bees in their leisure moments collecting supplies for the “autumn manoeuvres.” Such being the state of things, I felt sure that a paper or two on the dangers to be avoided at the commencement of the campaign would be well received if backed up by practical



experience. My object is to help the reader to avoid those snares and pitfalls into which one may so readily fall, and which are not, as a rule, to be found in the usual text-books on photography, but which, from having frequently fallen into in my earlier experiences, I should like to place before the beginner, for his benefit.

Let us suppose you are contemplating a photographic tour on the Continent. You want to buy whatever may contribute to the beauty of your negatives, but at the same time, you wish to reduce as much as possible the weight of your luggage. In order to be systematical, we will consider each article in turn, so we will commence with—

THE TRIPOD.—You *must* take a tripod. If you go on wheels, do not put your faith on those ingenious but useless contrivances for fixing the camera to a wall or to a tricycle wheel. If there is the slightest breath of wind, you are bound to get a drunken picture, and again—owing to that certain but inexplicable law of nature, you will always find it necessary to fix your camera in the only spot where you cannot convey your tricycle.

In selecting a tripod, there are some very important points to be noticed. Do not buy one too light; it is a good rule to choose a stand which is recommended for a camera a size larger than the one you want. Thus, if you have decided on a half-plate camera, buy a whole-plate stand; and if you get a whole-plate camera, ask for a  $10 \times 8$  or  $12 \times 10$  stand. I remember once going down to the South Coast with a very light, soft pine folding-stand, which I had bought to send out to a friend in India. The day was superb, with a fresh breeze blowing. I had nothing quicker than a half-second shutter, and I wanted to get some sea views. I despaired of keeping the camera steady, and resorted to Captain Abney's plan of passing a string over the camera on the stand and keeping it taut with my foot; but I was, at last, obliged to fold up the tripod and place the camera on the sea-wall, and hold it steady with my hand during exposure. I took two views in this way, and these were the only ones sufficiently sharp to be worth developing.

Another point. If you go abroad, it is essential to have a *folding stand*, otherwise it is impossible to pack it away when travelling in a carriage or on horseback. I have repeatedly found the importance of this when journeying in a cariole in Norway and among the Alps. I prefer a strong oak or ash stand, with the upper half of each leg consisting of two parallel bars, along any part of which the lower one is instantly clamped by a bolt and screw-nut. Mr. William Brooks, who has had immense experience in photo-

graphic touring, has written an excellent article on the subject ("Phot. Almanac," 1886, p. 85), and condemns the sliding tripod, as being apt to stick in wet weather. This is quite true in the forms in which fixation is obtained by a movable ring, and when the pieces are not parallel; but in the above form, should they ever stick, you have only to loosen the screw half a turn in order to remedy it. I have had one in use for nearly four years, and have never found it get out of order, and it has, over and over again, been drenched by salt and fresh water. Be sure that the head is large and quite level, so that the circumference touches the base of the camera in every part; it is best to have the margin a trifle higher than the centre, to ensure contact. A wide separation of the upper ends of the legs is more essential to steadiness than a large head, for, from a number of experiments recently made with camera-stands which I have constructed myself or which have been kindly lent to me for the purpose, I have satisfied myself that the shake of the camera is small compared with that of the stand, and is (apart from the intrinsic movements of the front and back of the camera) entirely due to imperfect contact between the base-board and the camera-head. This causes the rocking motion, and is largely independent of the size of the head. Secondly, at least five-sixths of the total shake is due to flexion of the legs round an imaginary vertical axis drawn through the fixation-screw. I will treat the mathematical considerations in another paper, but the practical points (the result of numerous calculations) may be summed up as follows:—

The steadiness of the tripod may be improved in six ways. 1st. By increasing the distance of the attachment of the legs to the top from their common centre (*i.e.*, from the binding-screw which fixes the camera). 2nd. By increasing the area of contact of the head with the base-board. The nearer the *surface of contact* of the head approaches that of the base-board of the camera, the steadier it will be. In an ordinary camera-stand you will fulfil both these conditions by increasing the size of the head, but in the case of a levelling-camera it is otherwise, as the head which is fixed to the camera may with advantage be smaller than that which affords support to the legs. 3rd. Provided the legs are not extended beyond 45 degrees from the vertical, the wider they are apart the better. It is true the stability increases up to 90 degrees, but I find beyond 45 degrees other factors come into play which detract from the general stability. 4th. By increasing the general area and width of each leg. This is a most important factor, and, *cæteris paribus*, the larger the circumference, or the greater the width and breadth of



the legs, the steadier will be the stand, for I find that for legs of similar shape the stability varies as the square of the sectional area of the legs. 5th. To be most effectual, the shape of the legs should be chiefly expanded, so that the horizontal diameter of each leg should be greatest at right angles to a plane passing vertically through each leg to the centre of the tripod. Lastly, the height of the stand is a more important factor than would be presupposed, for the general stability varies not as the *square*, but as the *cube*, of the length of the legs.

Before you buy the stand, see that the binding-screw is not removable, but yet drops down by its own weight below the top when the camera is removed. This can be easily effected thus:—Enlarge the hole in the top beyond the diameter of the screw, and file away all the threads of the screw except that part which enters the base-board of the camera (Fig. 1). Now, take a disc of brass—a halfpenny will do—drill a hole through the centre a trifle larger than A, but less than B, saw the piece in half, adjust the screw in position in the camera-top, bring the split halves together round the neck A, and secure them to the top by four screws (Fig. 2). The screw will now be always in

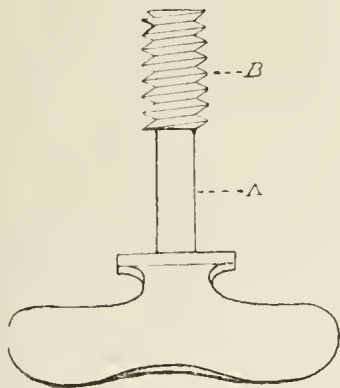


Fig. 1.

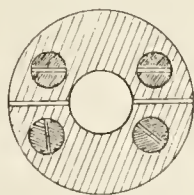


Fig. 2.

position, and yet never drop out. Through neglecting this precaution I was once detained a whole day in Norway until the local blacksmith made me a new one.

THE CAMERA AND DARK SLIDE.—I do not attach very much importance to the camera. It is ridiculous to say that “A is better made than B,” when about four firms make the greater number of cameras manufactured (!) and patented by houses in London and the provinces. Until lately all the best cameras were modelled on the two patterns originally designed, I believe, by Hare—the first, or “portable bellows camera,” in 1878, and the second, which he called the “new camera” (a great advance), introduced four years later, Rouch and Enjalbert being, to the best of my knowledge, the only two makers who struck off into an entirely new line. Lately, several new

and very excellent designs have been patented, among whom Smith’s, Rayment’s, McKellen’s, Sands & Hunter’s, Shew’s and Rouch’s deserve attention; but all appear to me to be merely developments of Hare’s 1882 model, and it seems to me it matters very little which one gets. The points to be secured are:—Moderate lightness and compactness, simplicity of action (the fewer adjusting screws and “contrivances” the better), rigidity of the two ends when fixed, a side and vertical swing-back and a good rise and fall to the front. Too light a camera is to be condemned. *Extreme* lightness is incompatible with durability and rigidity, unless the camera is braced up by numerous metal stays, the use of which at once introduces complications. I should say, speaking generally, that a whole-plate camera should not weigh less than  $4\frac{3}{4}$  lb., nor more than  $5\frac{1}{2}$  lb. Lastly, if the photographer be anxious to use short-focus wide-angle lenses, the bellows should approach the parallel form, as the conical form will cut off the side portions of the view.

(To be continued.)

## COLONIAL PHOTOGRAPHY.—I.

BY THE EDITOR.



VISIT to the Colonies Exhibition lasting several hours, during which I bound myself down, by solemn compact, to look at nothing but photographs, was rather a harder task than I had anticipated. For the place is full of wonders, and the attention is distracted every moment by strange sights, and strange words from still stranger people. But I managed to accomplish my task without any very flagrant breach of my self-imposed vow of abstinence, and these notes are the results of my observations. First, let me say that this Exhibition is the first show of the kind which has made extensive use of the camera. In every section, from India to Cape Colony, and from Australia and New Zealand to Canada, the walls are thick with photographs. Broadly speaking, I may say that every material thing exhibited has its local habitation made plain to us by a photograph.

We know not whose was the mind that conceived this happy idea, but he must certainly be congratulated upon the result. A good deal is, of course, due to the enterprise of Colonial photographers, who have sent frames of pictures, illustrating in a very vivid way the men and women, and the manners and customs of those with whom they are daily brought into contact. The photographs, with very few exceptions, are undeniably good, and in not a few cases they are



technically perfect. Their value from an educational point of view is immense, and we may feel certain that among the large crowds that daily visit the Exhibition there will be many who will be much interested in seeing with their own eyes the living presentments of those who, owing allegiance to the same flag, they cannot but regard as their brothers and sisters.

#### CAPE OF GOOD HOPE AND NATAL.

This section of the Exhibition contains a number of capital photographs. The Kimberley Local Committee have contributed a series to accompany and to illustrate the working of the famous diamond-mines—the history of which is more like a romance than reality. Here we see the scooped-out pit, several acres in extent, with the various “claims” distinctly marked, with aerial hauling-gears to pull up from a depth of 300 feet the blue earth, or famous diamond rock of South Africa. This blue earth, charged with its precious crystals, is received at the surface and carefully washed in order to yield up its gems. All these operations, so unfamiliar to our eyes, are shown by a series of photographs; while a glance at the models beside them renders them easily understood. In one picture we notice a couple of Kaffirs slung by ropes down the face of the perpendicular cliff, which they are attacking with a boring-rod, previous to using a charge of dynamite.

Another set of pictures shows us an equally unfamiliar sight. Here is an ostrich-farm, with the various incidents of farm life duly recorded. In one photograph we see the gigantic nests and eggs, and in another is shown how the strange, long-legged creatures are fed on prickly pears. Then there are plenty of pictures exhibited by the Public Works Department, which acquaint us with the appearance of the streets, buildings, and engineering works of this corner of Greater Britain. Nor is the natural scenery of the country forgotten. Four capital frames of pictures by Mr. R. Harris must be mentioned in connection with this part of my review. By these we see that South African mountain scenery is of the grandest nature. Here are vertical walls of rock, and enormous detached pinnacles, which together form the leading incidents of an extent of country which is happily named “The Valley of Desolation.” Here, too, is a magnificent series of cascades and waterfalls, while a frame of instantaneous studies tells us that Mr. Harris is well acquainted with the wonders capable of attainment by means of gelatine plates.

Mr. Ferneyhough, of Pietermaritzburg, who was the special war photographer with the British troops during the unfortunate Zulu cam-

paign, sends a wonderfully complete series of pictures, 92 in all, which represent all features in colonial life in this part of the world. He has very wisely appended to his frames explanatory notes, which are as interesting as the pictures themselves. Strangely enough, he seems to be the only exhibitor who has followed this course. Here are Kaffirs of all sorts and sizes. Dusky girls, with their fringes (*i.e.*, petticoats) of twisted grass, or beads, whose value ranges from four to ten, fifteen, or even twenty cows! The younger ones serve as nursemaids to the children, and carry them on their backs, secured by a blanket. When they marry, the girls assume a skin dress, which is worn from the waist, and extends to the knee. This is always a gift from the husband, and is a mark of distinction, as the wedding-ring is with us. Here we see a native rubbing two sticks together to procure fire—a practice still in vogue, but which is dying out with the advent of Bryant & May. It is most interesting to follow the home-life of this primitive people by means of these photographs. A native kraal forms a most picturesque scene. Built in a circle, and surrounded by a palisade, the kraal contains several living-huts, which look like enormous beehives. We learn that it used to be the custom for each married woman to have a hut to herself; but now that there is a hut-tax, the practice is dying out. In one picture, a cow is being milked, with its calf standing close by, for Kaffir cows object to the process unless they see their little one near them. If the calf should happen to die, some stratagem has to be resorted to—one of which is to stuff the calf, which the cow sees, and is obedient. Sporting scenes, various views, a capital photograph of the comet of 1862, and many other attractive pictures are also found in this collection. One picture is of particular interest: it is a photograph of the cross erected by command of Queen Victoria on the spot where the Prince Imperial met his untimely fate.

The Astronomer Royal of Cape Town exhibits some good views of his observatory, together with an interesting series of stellar photographs which have been taken there.

I trust that provision has been made, as in previous shows, for photographing the various exhibits here, and more especially the curiously-dressed natives of the various colonies, who are seen walking about among the amused visitors. I was much attracted by a black baby, about twelve months old. He seemed quite happy in his mother's arms, and was placidly indifferent to his unwonted surroundings. His little brown, polished head, with its scanty bits of black wool, which looked as if they had been stuck on with



gum, was a study in itself. Close by, walking up and down, were a couple of well-made niggers, with nothing on but a brown blanket, a straw hat, and a string of blue beads.

But to return to the exhibited photographs. Lying upon a table in the same section is a card of eighteen pictures. Here is a noble chief in a wonderful get-up. He wears a tall, conical hat, and what appears to be, and doubtless is, a cheap Manchester counterpane. He is rather overwived, it seems, for another picture introduces us to his selected ones, twenty-seven in number. Three of them only are clothed. Another chief is content with only eight helpmates. It is to be noted that the selected ladies seem to have the choice of either shaving their heads entirely or cropping them as closely as we do our convicts. The effect in either case is not pleasing to European taste.

Other photographs there are of the places that were so familiar to newspaper readers during the time of the Zulu War—Greytown, Durban, Tugela, &c. With more pleasant feelings can we look upon coffee-plantations, fields of arrow-root, and those photographs which illustrate the beauties of the scenery—notably some fine pictures of waterfalls gushing over vertical walls of basalt. As a whole, the photographs from South Africa are good and full of interest. The exhibitors, besides those already named, are Messrs. S. B. Barnard, J. E. Bruton, W. Hermann, and William Roe. Should this notice meet their eyes, it may be pleasant for them to hear that their good work is appreciated in the mother country.

#### NEW SOUTH WALES.

It is a far cry from Cape Colony to Australia, but at South Kensington the journey can be done in about two minutes. In this section, again, we have plenty of pictures. Let me give the first place to one of national interest. This is a composite photograph, containing portraits of every officer and private in the New South Wales contingent which volunteered for service in the Soudan last year. It records an event which proved that England can count upon help from her most distant possessions in time of need. The photographs are well done and artistically pieced together. The artist is Mr. B. C. Boake, of Sydney.

The New South Wales section can boast of the largest photograph shown in the Exhibition, its height being about sixteen inches, and its length, as nearly as I could judge, six yards. It is certainly one of the longest panoramic views ever taken—or rather constructed, for it is composed of eleven sheets of paper joined together. It is a view of Sydney and Port Jackson, taken from

the Garden Palace. Many will think that it is more remarkable as a triumph of ingenuity than as an artistic composition. The places of junction show badly—they always do show in these panoramic views, and the reason seems to be that the edges of the negatives are thin, and therefore print slightly darker than the rest of the surface. This would not be noticed if the various sections were framed independently of one another; but when the darkened edges are brought together, the effect is, of course, marred. This photograph is exhibited by the Commissioners. Above this last frame are hung several enlargements, all apparently over-exposed, and therefore weak and flat in consequence.

All visitors to Sydney agree that it is a most beautiful place, and I was, therefore, prepared to admire the photographs of the city exhibited by the Department of Public Works. Here are views of the harbour, of the streets and public buildings. Among these latter must be mentioned Government House—a really fine piece of architecture. A lovely spot called Fern Dell reminds one of many a pretty spot on the Lynn, North Devon. It has attracted many cameras, for the same subject is shown three or four times by different exhibitors. The Botanic Gardens afford another series of beautiful studies, in which tropical plants and water form the chief features. Turning to the north side of the Court we come upon several landscape and architectural photographs by W. Slade, mostly taken at Bathurst, and also some striking river scenes and views in the Blue Mountains. Here, too, are a number of pictures illustrating the various fishes of the country. Some of these are so excessively ugly and curious that they would serve as capital models for masks in a pantomime.

The natural features of this colony do not seem to be so diversified as in other sections—if, that is to say, we may judge by the photographs exhibited; but there is one extremely fine series here by Caney & Co., Mount Victoria, which at once attracts attention. It consists of a series of subterranean views of Fish River Caves. I should much like to know what kind of artificial illumination was used for taking these pictures, some of them representing caverns one thousand feet below the surface of the earth. Most probably magnesium—either in the form of ribbon or forming part of a pyrotechnic mixture—would be adopted, both on account of its portability and its high actinic quality. The scenes depicted are grand in the extreme. Masses of stalactites and stalagmite here take all conceivable forms, and are, of course, called by fanciful names. Here, for example, is an immense arch of rock, hung with white, glittering pen-



dants, and called "Kitty's Bower." Another, "The broken column in Lucas Cave," is quite unique. A massive pillar, evidently due to the gradual growth of a stalactite, has originally formed one mass, joining the roof of the cave to the floor. But, by some convulsion of the rocks, it has broken asunder in the centre, and the two halves are no longer in a vertical line. One has moved laterally away from the other. In the picture entitled "The magnificent shawls," the limey drops which have fallen for ages from the rocky ceiling have solidified into marvellous crystalline, semi-transparent folds. When we remember that in nature these stalactites are of varied tints, we can imagine how beautiful they must be in reality. Even in the photograph, the contrast between them and the dark recesses of the cavern which form a background is most effective. "The hand of Joshua" is the title of another cave picture, in which a crystalline mass of stalagmite is formed into a gigantic hand with uplifted finger. Why it should be the hand of Joshua I cannot guess. It would be very little use for him to command the sun to stand still here underground, where it is always night. "Lucinda's curtains and columns" and "Lurline cave" I must leave to tell their own stories. The whole series illustrating this underground world is most beautiful. With it I must close my review of the photographs shown in the New South Wales section of the Exhibition.

#### VICTORIA

is separated from her neighbour, New South Wales, by a golden gate—a kind of gilt Temple Bar with three arches, the mass of which represents the amount of gold which has up to this time been raised in the colony, and which is valued at 216 millions sterling. Under a glass case is shown model nuggets of the precious metal, and under another masses of pure gold, each of the value of several thousand pounds. It is curious to see how crowds of people flock round the genuine metal, and leave the mock nuggets unnoticed. Grown-up folk are like children in preferring true stories to "make-believes." But I must not be led away from my purpose. The only gold I can recognise is in the form of the chloride which has been employed in toning the exhibited pictures.

Victoria is well represented photographically, and there is a pleasant feeling of good-fellowship when one suddenly comes upon the fine examples sent by the Amateur Photographic Association of the Colony. These pictures are by no means behind the amateur standard here at home, but the views are strange to English eyes. Wildernesses of stately ferns, sparkling waterfalls, and open

landscapes are the principal subjects. Beyond these there are several good interiors—notably one depicting the annual exhibition of the Association. Judging by the size of the room here represented, and the number of frames which crowd its walls, the society cannot be an unimportant one. It is curious to find that a pursuit which has become quite an established pastime here should also have so many votaries at the Antipodes. In a series of oil-paintings, hung near the photographs, we are able to gain a knowledge of the brilliant colouring which nature assumes in this part of the world. Three fine pictures by Duncan Peirce should be noticed. They are enlargements on Morgan & Kidd's bromide paper. One is a most charming study of two ladies in a boat gathering water-lilies.

Melbourne, one of the finest capitals of the world, is reflected here in dozens of frames. The streets are broad, and the buildings mostly after English types. The famous observatory is represented, together with separate views of its great reflecting telescope, transit circle, &c. There are also four large pictures of the phases of the moon. The views of Government House, with groups of figures, are to be specially commended for their fine quality; they are worthy of close examination. Many of these pictures are framed in a manner which is new to me, but very effective. The prints are on dark mounts, and these are tacked with brass pins to a background of rumpled, coloured satin.

Mr. J. W. Lindt, of Melbourne, exhibits a collection of studies taken at the Botanical Gardens there, some of which are repeated as enlargements, 20 in. by 16 in. The same gentleman exhibits some fine "Views of New Guinea," illustrating the characteristic fauna and flora of the island, the manners and customs of the natives, and the general landscape scenery. These pictures, it should be mentioned, were taken during the expedition conducted by the late Sir Peter Scratchley. Very perfect examples of portraiture are those shown by Messrs. Johnstone, O'Shannassy, & Co. The models are naturally posed and well lighted. This firm describe themselves as "artist photographers," and they fully merit that title. Messrs. Stewart & Co. also distinguish themselves by capital work, and the same can be said of Messrs. Foster & Martin. This last firm exhibit two frames, labelled Australian homes, but the contents hardly justify the name, for the subjects, although of excellent quality, are decidedly mixed.

#### SOUTH AUSTRALIA.

The photographs in this section are not hung in frames, but are contained in a dozen albums, which will be found lying on a table in the



Court. They are good, bad, and indifferent as to quality. The best are so highly glazed that their artistic value is altogether destroyed. Some, by Mr. J. Warren, are free from this blemish, but they are of very indifferent quality. Many of them are covered with stains, and are certainly not suitable for the pages of an Exhibition album.

#### NEW ZEALAND.

One can step from Australia to New Zealand in a minute or two, although in reality a thousand miles of ocean separates the two countries. New Zealand presents us with a splendid collection of pictures. The first one that attracts notice is a photograph of an enormous tree—the Kauri pine. The girth of this particular specimen is 46 ft., at a height of 6 ft. from the ground, and the first branch springs from the trunk at a height of 65 ft. This photograph was taken in the Northern Wairoa Forest, and the operator has had the good sense to group round the tree a company of men and horses, which at once indicate its gigantic proportions. Close by the picture is a horizontal section cut from a similar tree, and highly polished. There are also shown large masses of kauri gum—a resin which exudes from the roots—and is dug up and used for the many purposes to which copal is applied. Some other large photographs shown here look as if they had been taken on bromide paper, and had been insufficiently washed.

Next I must notice some photographs of great interest by Mr. Easter. These represent interior and exterior views of Canterbury Museum, Christchurch, N.Z. Among these is a photograph of the skeleton of that wonderful wingless bird, the Moa. Some of my readers will call to mind that a few years back an eminent geologist found in a New Zealand swamp the bones of some gigantic creature, which presented most unusual features. These bones were sent to Professor Owen, who said that they must belong to an extinct wingless bird. The Maoris say that such a creature was alive in the days of their forefathers, and there have been rumours that natives have actually, within recent years, seen the mysterious bird in certain unfrequented portions of the islands. However this may be, many complete skeletons of these mighty birds, some of them double the height of a man, have since been found, and more than one specimen is now at South Kensington. In the photograph of the Moa-room of the Christchurch Museum, we see the birds of all sizes represented by their skeletons. They have more the appearance of giraffes than anything else that I can call to mind.

New Zealand, so far as its natural scenery is concerned, is quite a photographer's paradise. The grandeur of the mountain and lake scenery is almost beyond belief, although here it is placed before us with marvellous fidelity by the camera of Messrs. Hart, Campbell, & Co., who have won prizes for their pictures at several Colonial Exhibitions. Another lovely set of pictures, entitled "New Zealand through the Camera," has been sent by Messrs. Burton Brothers, of Princes-street, Dunedin. Of these I pick out, as being the finest, "The Boulders on Moeraki Beach," which have the appearance of gigantic Dutch cheeses; "The Bowen Fall," a splendid cataract; and, lastly, the huge sugar-loaf mountain, capped with cloud, called Mitre Peak. The most wonderful feature of New Zealand scenery is represented by the hot springs and steaming geysers, from which are deposited those terraces of *siliceous sinter*, which are commonly called petrifications. The white and pink terraces of Rotomahana afford subjects for many photographs in this section of the exhibition. Those by Mr. G. D. Valentine, of Auckland, are among the best. But Mr. J. Martin bears off the palm with some splendid examples on 20 x 16 plates. Altogether, New Zealand contributes a wonderful series of photographs, introducing us to nature in her most eccentric moods. Well may the colony be proud of its scenery, and, let me hasten to add, of its photographers.

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A NEW PHOTOGRAPHIC SOCIETY AT REIGATE.—On Wednesday evening, April 16th, a preliminary meeting was held at the Public Hall, Reigate, in the Museum, in connection with the Holmesdale Natural History Club—R. L. Hesketh, Esq., in the chair—with the view of forming a Photographic Society or Section. There was a large attendance. The subject was introduced by Mr. W. Brooks, who set forth its objects. A goodly number offered themselves for election, after which a pleasant hour was spent in discussing various photographic matters. The meeting then adjourned to May 5th. On Wednesday evening, May 5th, the first general meeting of the above society was held—R. L. Hesketh, Esq., in the chair—when the election of officers took place, viz., president, R. L. Hesketh, Esq.; vice-presidents, Dr. Wheeler and Mr. W. Brooks; committee, Messrs. Ferneley, Lenthall, Milner, Skinner, Baker, and Urquart. A communication was read from the Croydon Photographic Society, stating that their first photographic ramble for the season would take place on Saturday, May 8th, at Gomshall, and asking members of the Reigate Society to join them, when several of the members gladly accepted the offer. The subject for the evening was "Cameras, with the use of the swing-back." The meeting then adjourned until Wednesday, May 19th, when a paper was read, by one of the vice-presidents, "On the Construction of Photographic Lenses, and their use."



## THE AMATEUR EXHIBITION IN BOND STREET.



HE Exhibition of Photographs by Amateurs has now become an annual treat, to which all lovers of the art-science look forward with extreme impatience. This year the opening of the Exhibition was graced by the presence of Royalty, for H.R.H. the Princess

Frederica—to whose Home for Women the profits of the undertaking are to go—performed the pleasurable little ceremony. The London Stereoscopic Company, under whose auspices these Exhibitions are held, deserve well of all lovers of the art for their enterprise, and for showing the world what an important position amateur photography has assumed. Although the pictures exhibited are not quite so varied in their character as those which figured in the same galleries last year, they show a marked improvement, not only in technique, but in artistic pose and choice of subject. There are only one or two pictures in the whole collection (about two thousand) which can be called bad. The average are good indeed, and a large proportion of them are gems of the first water. The pictures, like those of last year, are divided into classes, and each class has its gold, silver, and bronze medal to be awarded to the best pictures in that class. When we mention that the judges were Captain Abney, Thomas Faed, R.A., and Sir James Linton, P.R.I., it will at once be conceded that the verdict was in good hands. We will now proceed to give a detailed account of the most noteworthy pictures.

CLASS I.—The first pictures in this class which strike the attention are those by Dr. Alabone, who must be complimented not only upon the grouping of his models (his pictures are mainly figure-studies and portraits), but also upon the clearness of his work. It is all spic-and-span, and has the well-finished appearance of professional work. But a professional could not possibly give the time and thought to working out a story like Dr. Alabone has done in his photographic rendering of

Hood's "Song of the Shirt." The pathetic story could have been rendered very painful had Dr. Alabone selected for his model a wan and haggard girl; but he has chosen a very well-favoured and well-fed young lady, whose decease is almost as unaccountable as that of the victim of the Pimlico mystery. The artist has been led into one grave fault, which he would do well to avoid, should he try his hand again at any subject of a like kind. In the last picture of the series, where the poor worker is lying on the floor, sleeping her last sleep, and covered with a sheet, the scale of the figure is about

one-third larger than in the other pictures, leading to the assumption that the corpse has grown longer by about twenty-four inches. Frame No. 9 introduces us to three very fine platinotypes; and again in No. 15, which is highly commended by the judges, we have once more specimens printed by the permanent process. It is a striking feature of this exhibition that the Platinotype process is so often represented. The public taste wants educating in the matter of pictures, as in every other matter, and as people get accustomed to the cold engraving-like tone of platinum prints, they will be led to own what has long been acknowledged by artists, that the effect is much better than the shiny purple of the more common silver-printed photograph. In No. 20, "Silent Judges" (by the Hon. Mrs. Holden Hambrough), a couple of owls are solemnly blinking over some knotty legal problem, and fully justify the title given to the picture. We must



The "Song of the Shirt."

next call attention to some admirable enlargements by Mr. B. B. Turner, the most effective of which are No. 24, "The Mill-stream, Boulter's Lock," and No. 25, "Haddon Hall." Nos. 26, 27, and 28 are by Lord Erskine. We understand that he is only a beginner in photography—but the work is wonderfully good for all that. Mr. John Clerk, Q.C., exhibits two very good pictures of a very dark, and therefore difficult, subject—Nos. 29 and 30, "The Interior of the Temple Church, London," from two different points of view. In No. 32 we have a portrait of a lady in the snow—which is about as artificial in character as the sugar snow on a twelfth-cake.



However, the artist has not fallen into the error common among American artists, who are fond of this snow-flake idea, of carefully guarding the face from the falling shower. No. 40, from an Eastman film negative ("Four Views," by Jean Ville), are studies of icicles. The wonderful translucence of these Alpine stalactites is splendidly rendered, and the picture speaks well for the new process which it represents. Other pictures of mountain scenery, which are by the same hand, are dotted about the exhibition. Mountain-climbing with a stock of glass plates is not a thing to be desired, and we fancy that the Eastman film for this class of work will take a leading place. The pictures prove that the process will do the work well. Mr. Wilkinson's three pictures (Nos. 37 to 39) are worth careful notice. The lane with "the noisy geese that gabble o'er the pool" is quite a picture. Photographs are many, but *pictures* are few. Many people (the judges included) would be likely to



"Silent Judges" (No. 20).

pass by No. 55, "The Cottage near a Wood" (by Mr. Mostyn Clarke), for it is hung so low as to suggest the thought that it might be more aptly termed, "Cottage near a Wooden Floor." Look at it closely and see what a little gem it is. The sparkle of the foliage in this picture is quite remarkable, and at the same time there is a soft atmospheric effect between the near and distant trees which is not often reproduced in a photograph. The lighting, too, is perfect. There is nothing distinctive about the subject—merely a country road—but the artist has known how to depict it from the best point of view, and at the best time of the day to show off its beauties. The three frames numbered 56, 57, and 58—views of the Engadine (W. Muller), which have won the gold medal in CLASS I.—are simply the most perfect photographs which it is possible to produce. Pages of descriptive matter might be written about them without doing them justice.

Photographers would do well to pay the Exhibition a visit, if only to look upon these beautiful pictures. Hard by, on the other side of the doorway, we come to No. 62 (by J. J. Cole), a good view of St. Paul's Cathedral, taken from an unusual point; apparently from the tower of Bow church—or from some other high building in Cheapside. The old bridges at Tilford, Farnham, by J. H. Knight (65), must be noticed for their quaint picturesque beauty. Some day they will, no doubt, be replaced by some straight iron monstrosities, which will rob the place of its greatest charm, and at the same time add an unwelcome item to the parish rates. Just above these last-mentioned pictures there is shown a Dutch street (in Frame No. 64, by C. H. Aitken), which is noticeable for its cool, shady aspect. It is a refreshing contrast to the bulk of the pictures, which are taken in actual sunshine. No. 66 (Mostyn Clarke) is a very prettily-taken view of a very ugly room. It is full of half-tone, and has a mellowness about it not often seen. No. 74 again reminds us of the artistic capabilities of the Platinotype process, when handled by a capable photographer. Mr. Emerson has here given us four beautiful studies taken in the Norfolk Broads, with figures which appear to be unconscious of the presence of a camera, and are therefore natural. The man in the boat, lowering his net into the water, really looks as if he meant business, and is not "making pretend," as children say. The same may be said of the man who is in the act of hauling a fish out of the water, and is about to apply the persuasive argument of the landing-net. Mr. Paul Lange sends three pictures, Nos. 76, 78, and 79, together with some very good enlargements from the same negatives. All are well done, but the palm must be awarded to No. 76, "Approaching Storm from behind Dunoon." The clouds here are most admirably portrayed. No. 81, "A Year's Wanderings," by Mr. Gordon Cotton, loses effect from the fact that thirteen pictures are crammed into one frame in a biggledy-piggledy fashion. Looked at individually, the pictures show great merit. Unfortunately for them, they are hung next to a very well-framed set of pictures (No. 82, six views in Somersetshire, by C. E. Nesham). These pictures are good, and the subjects are well chosen, but they are toned to a foxy red colour, which does not harmonise with the maroon card upon which they are mounted. Frame 83, by F. A. Dymond, contains four capital platinotypes, the subject of one being a most fairy-like dell, which merits its title, "A Sight to Delight in." "A Likely Spot for Wild Ducks," in the same frame, is also a good bit of work. Amateurs are now beginning to understand the working of this process, for we see none of those washed-out abominations which were once so common under the name of platinotypes. No. 92 is a portrait of the captain of the Sidcup Fire Brigade; it has the disadvantage of being interesting to one person only, and that person is the captain of the Sidcup Fire Brigade. No. 93, "Where King Winter holds his Court," by R. Leventhorpe, is the best frame of snow pictures in the Exhibition. For pictures of the same kind, Mr. Leventhorpe last year won a silver medal. This year he has had many rivals to compete with, for we have had such an unusual dose of snow that pictures of winter have been produced by the thousand. There is none of the "chalk and soot" contrast in these pictures, which is so common in snow photography—a fault which it is very difficult to avoid. No. 96 would have been a pretty good view



of St. Paul's and Blackfriars Bridge, if the artist had not taken the precaution of including an enormous chain in the composition, which cuts it in two from top to bottom. Perhaps the chain was let down from above at the moment the lens was uncovered; if not, the photographer deserves to be——. But let our condemnation be lost in admiration, excited by the wonderful atmospheric effect shown in No. 104, "Cloudland on the Righi," by C. A. Barclay. Banks of cloud occupy the principal part of the picture, and above them the mountain-tops rear their heads in beautiful distinctness. No. 107, "Wintry Weather," by Lieut. Cole, shows us four capital snow pictures, which contrast well with (No. 111) Mr. Cohen's "Views in the Ardennes," where the foliage is crisp and still. Mr. Manfield's rustic scenes are beautiful examples of photographic art, and the pictures are well mounted and well framed, No. 113, "A Somerset Cottage," being, perhaps, the most attractive of the three. These pictures bring us to the end of Class I.

CLASS II. is devoted to marine subjects, and more especially to yachts in motion. No. 116 (by W. Gaddum), which has won a bronze medal, contains four views, with beautiful reflections of clouds and boats in still water. Mr. George Davison contributes a frame of three pictures to this class—"A Breaking Wave," "A Tug and Trawler," and "Entrance to Lowestoft Harbour." The last-named picture is more technically perfect than the other two. Mr. Noel Malan's "North Sea Fishing Smacks" is also good work. In 119-120, Mr. Leventhorpe proves that he can do other subjects besides snow scenery. Both the yachts and his "Breaking Wave" are admirable. In 123 are four capital "Sunset Studies;" and, in looking at them, it is not difficult to conjure up to the mind's eye the gorgeous colours which must have been present in the originals. In 131 there is a very good yacht in motion—again by Mr. Leventhorpe—with a peculiar sheen on the water, which is seldom seen in a photograph, and never on an artist's canvas. The silver medal of this class goes to a very beautiful series of yacht scenes by Mr. P. H. Emerson, "Horning Regatta." The fairy-like vessels are all in movement, and there is plenty of "go" about them. The oily water is painted with zigzag reflections of the delicate spars of the boats on its surface, affording a study not only for the photographer, but for the landscape artist. The beach studies at Bognor, by Mr. A. R. Dresser, are small, but very delicate and beautiful. There is a creamy froth upon the surf which is only seen in nature—and in a photograph. No. 138 brings this interesting class to a close, with views of the yachts *Puritan* and *Genesta*, whose racing qualities were the subject of so much comment a few months ago.

CLASS III. is given up to studies of animals, sporting scenes, out-door groups, &c. 139 is a series of military groups by Mr. de Lara Cohen; and in 140 is a very charmingly-posed child, by J. C. Olivet. The work of Mr. H. Manfield is always artistic, as well as being technically perfect. Frame 142 is a series of views in Brittany, most varied in character, but all showing the skill of this gentleman. The one of the farrier's shop, with the operation of shoeing horses going on, is a very striking photograph; but so also is the old Brittany-street, with two priests rapidly marching along, and the light and shade on the old house in

the centre must attract the attention of all artists. Mr. Manfield has splendid material in this picture; but he has certainly made the most of it. The steamboat leaving the quay is also a good picture, artistically chosen, and the dancing lights and shadows on the water are very effective, but, to our taste, a little too crisp. Had the exposure been a little longer, the water would have appeared more liquid, and in consequence more real. To Mr. Emerson's picture, "A Stiff Pull" (143), a silver medal has worthily been given. This is a very artistic production. The horses are tugging the plough up hill, and the ploughman is pushing with all his might to help them in their labours. The clouds aid the composition by carrying the eye to the extreme right of the picture, which is the summit of the hill so eagerly sought for by both horses and man. The whole is a most successful production of difficult action, and is one of the most striking pictures in the room. Animal studies, by Miss Nina Latham (147), is a good series of cattle-groups. To Mr. H. O. Davidson has been awarded a bronze medal for a series of pictures called "A Fortnight in a French Château" (152). There are several groups, but the principal one, where the guests are gathered together in front of the old house, is one of the simplest and most unaffected groups we have ever seen. The rest of the series are interesting, particularly the boat party, and the portrait of the old retainer is a fine study of an old Breton, grizzled and worn with service. Frame 156, "Furze-cutters" and "Eel-picking," has been marked for commendation by the judges, and worthily so, for both these pictures display great artistic knowledge. They are printed in platinum, and are very luminous. The action of the figures in both pictures is free and unconstrained. Six instantaneous views, by C. E. Nesham (155) are very successful pictures of cattle. The groups of sheep are very natural, but perhaps the best picture in the frame is the group of horses ploughing. A little more exposure would, however, have improved one or two of them. Miss A. Van den Bogaerde has produced some charming little pictures in Frame 159. A lake scene with boats is an artistic little gem—a little overprinted, but perfect in balance of light and shade, and we would much like to see an enlargement of it. Another equally beautiful picture in this series is a group of two ladies in a boat, among the rushes on the margin of the lake, and again we feel the subject so beautiful that we desire to see it on a larger scale. The hunting pictures in this series are also very successful.

Lady Roscoe has been most fortunate in her studies of North Lancashire Industries (170), for not only has this frame carried off the gold medal, but to the centre picture, an old weather-beaten fisherman with net and line, standing on some stepping-stones in a swift-running stream, the *Amateur Photographer* silver medal has been awarded. The light and shade on this figure are very artistic, and the photography in all three pictures in this frame is perfect, notwithstanding that they are of large dimensions. The light and shade in "The Charcoal Burners" are very fine, as also in the group of two figures apparently burning rubbish, or possibly charcoal, and the smoke in the middle-distance by contrast throws the two figures in the foreground into strong relief. Frame 166 contains twelve platinum pictures by the Rev. G. W. Hall, M.A. They are small, but very bright and effective. The group of village



school-children is fresh and natural, and the same may be said of the winter scene. Indeed, the series is most varied, comprising sportsmen, cattle, frost scenes, as well as those named, and all more or less successful.

CLASS IV. is devoted to the most original pictures—photographs taken under difficulties, interiors, composite pictures, &c.—but in this class there are not a great number of entries. Mr. C. H. Aitkin's interiors (174) are some of them well chosen, but are spoiled by under exposure. The series of pictures illustrating Tobogganing (175) is very interesting. In one of the sections there is a group of children all ready for the start, and in another they are off down hill on the snow at the rate of thirty miles an hour—at least, so it is announced; and in another we see them toiling back at the rate of three miles an hour—and this we can believe, and are sorry for them. A bronze medal has been awarded to the instantaneous studies by Dr. Alabone (179). In one of them, "Leapfrog," the picture has been taken at the moment when the figure is in the air, just coming over the back of his companion, and there is no trace of movement. In the other picture a still more ambitious attempt has been made. Two divers are taking headers from the top of a bathing-machine. One of them is taking the water as straight as an arrow, whilst the other is turning a somersault. There is a little movement in both figures, but this is not to be wondered at when the extreme difficulty of the subject is properly taken into account; and Dr. Alabone has rightly entered in the class devoted to photographs taken under difficulties.

Miss A. Van den Bogaerde has produced a charming little picture in her "Artist's Atelier" (182). It is an interior, with all the *bric-à-brac* accessories considered indispensable. The artist is asleep, and some roguish companions have stolen in on tip-toe, and one of them is in the act of tickling the unfortunate sleeper with a feather. The grouping is most successful, and the whole picture very harmonious in treatment. The interior of "Monkish Castle, St. Honorat, Cannes," by Mr. C. A. Barclay (183), is a very artistic work, and the light and shade are so effectually rendered as to give quite stereoscopic relief. The light floods down through an apparently roofless building, throwing the ancient pillars into most realistic prominence, and thereby produces an effect that would gladden the heart of a scene-painter. M. Marius has exhibited some very interesting photographs of objects discovered thirty feet under modern Paris (184). They are most interesting fragments of Roman Lutetia. There are some very effective photographs of "Mines" (186), evidently produced under great difficulties, by Mr. A. Sopwith, and they have received a silver medal.

CLASS V. is devoted to pupils of the Company; and gold, silver, and bronze medals were placed at the disposition of the judges. Captain the Hon. E. Dawson's "Eight Studies" (188) have earned a bronze medal. The group is very good, as also the interior. To "The Haunts of the Heron" (189), an artistic production by Miss F. Harvey, has been awarded a silver medal. "Pontresina" (190) is a series of very fine photographs of mountain scenery by F. Pollak, and in one of them the clouds are unusually grand. "The Wreck of the *Missouri*" (191), by Sidney Platt, is a good photograph of an extremely painful subject. A fine steamer is over on her beam-ends,

filled with water, and at the mercy of the remorseless waves. Help is evidently hopeless, and annihilation is only a question of time. "Salmon-fishing on the Tweed" (193) is a very good series, by Col. Ralph Vivian. In one of the photographs there is an extremely well-posed figure of a bonny Scotch lassie, holding a boat. The contrast between the salmon-stream in summer and winter is very interesting, the ice-bound river being a very fine picture, marred somewhat by the conscious pose of the figure in the foreground. "Florida Orange Groves" (196), by J. T. Hopwood, is a frame of extremely good photographs, and the centre picture, a cluster of oranges, is a study of light and shade that should be in every art school in the country, and this gentleman has well deserved the medal awarded. Lieut. W. R. Little's "Views in India" (200) have been honoured by a gold medal. They form a fine collection, and are unusually delicate, when the intense character of the light is taken into account. The architectural subjects are very good, and the delicate tracery so characteristic of Indian architecture is rendered with marvellous fidelity. "In the Murree Hills"—a very artistic picture of a grand mountain pass—is, perhaps, the finest photograph of the series.

CLASS VI. is devoted to beginners, and only those amateurs who have commenced the practice of photography during the past twelve months are eligible to compete; and certainly some very charming pictures are to be found in this Class. Mr. A. H. Clark's "Racing Yachts" (209), in size and treatment, remind one forcibly of the yacht pictures of West and Symonds, and they have justly earned a bronze medal. This class of work demands great experience and skill, and we are astonished, therefore, to find these pictures the work of a beginner. Surely he must have had the help of a good *coach*! Mrs. West's "Four Interiors" (225) are very small, but very perfect. They are well exposed, and, in consequence, there is no appearance of crude lights and shadows, and the effect of the whole is very harmonious. A silver medal has been awarded to them. The same lady has produced some very charming studies of children in nautical rig, called "On Shipboard" (228). In one a sturdy little urchin is clinging to the ratlines in a fearless and unconstrained position. Indeed, it may be said of them all that they are extremely free and natural in pose. 222, "Off for a Row," by Martin J. Harding, is a very successful production, as is also "Carting Gravel from the Beach" (235), by Thomas Taylor, which is the best of his three studies. C. R. B. Chetwynd has shown great taste in the mounting of a charming little platinum picture, "St. Moritz Lake" (226), as also in his picture "Via Mala, Thusis" (238); and many of the exhibitors of platinum pictures in this exhibition would do well to copy him, for did they do so, they would find their pictures gain immensely by the change. Mrs. West again carries off a silver medal for a frame of charming little views (241). The subjects are most varied, and all are perfect, but we think a study of horses is the most artistic of the series. Dr. E. G. C. Snell has some good pictures in Frame 239. The view of Old Chingford Church is a capital rendering of the ivy-covered ruin.

CLASS VII. represents the unassisted labours of the lady amateurs, and we are pleased to be able to say that in this class will be found some of the most artistic and technically-perfect photographs in the room.



Miss Nina Latham's pictures (243) are very artistic, but strike us as too cold in tone for some of the subjects. The interiors are very good, and the swift-running village stream, with the picturesque backs of old houses close down to the water's edge, furnish material for a very fine photograph. Miss Maud Kitchen's snow scenes (244) are very delicate and beautiful, and her "Dogs" (245) deliciously comical. In one, a music lesson is being given, and in another a hangdog culprit is before the judge, whilst in a third it is washing-day. Perhaps the best of the series is the school, where the dunce is patiently submitting to the disgrace of the fool's-cap. Lady Roscoe shows several of her large photographs illustrative of North Lancashire industries in this Class also (246), and they are characterised by the same technical perfection and artistic treatment which mark her work in Class III., and to these also a silver medal has been awarded.

The "River and Country Scenes," by Miss Eleanor Conant (247), are apparently on the Thames—or at any rate, the greater part of them. They are printed in platinum, and are among the most artistic productions in the Exhibition; and it is a pity they are not shown to the best advantage, for they are too heavily framed for such delicate pictures. All are good, but the most striking is "The Lock," and a very charming sketch of the Thames, with very beautiful reflections in the water. The clouds are put in with great taste, and help the artistic effect immensely. The Hon. Maud Lawrence has produced a series of pictures of varying excellence (249). "The Milkmaid" is a capital subject, and a good photograph; but the pose is neither natural nor artistic. This cannot be said, however, of a very gracefully-posed young lady, holding an Eastern water-bottle, and standing against a Gothic arch. The sunlight glints down, just touching the mouldings of the arch, and, missing the face, falls upon the dress. The effect is very uncommon, but extremely beautiful. What can be said of at least two out of the four groups by Miss Maud C. Kitchen (250)? They certainly serve as examples to warn ambitious photographers not to attempt the impossible. A punt has been turned into a raft, and though the actors have done their best to act the scene in the great picture in the Louvre, "The Wreck of the *Medusa*," their well-favoured condition makes the attempt hopeless, and it won't do. Miss Halford's "Six Portrait Studies" (251) are some of them very good, and in one of them, a portrait in the costume of Edward VI., the pose is natural and the lighting very artistic.

The "Mountain Scenery," by Jean Ville (253, 254), is very striking, but the frame of platinum prints is certainly the best. Miss F. Harvey's "Jolly Dogs" (256) are very good, and the same may be said of "A Winter's Day at West Derby," by Miss Nina Latham (258).

On the screens are some more pictures of Alpine scenery, by Jean Ville (261, 263), most of them very fine, and in one the sharp crystalline glacier cuts against the dark sky in a marvellous manner. A bronze medal has been given to Miss E. G. Stone for a series of pictures in Cornwall (257), all of which are very effective. "The Quay Pool, Clovelly," is, perhaps, the most picturesque. In her series on the screen (262), called "A Holiday Outing," there is one picture that particularly strikes us as a perfect little gem. It is a park scene, with wood and water; but the low sunlight glinting

across on to the tree, in the foreground on the right, is an accidental effect of great beauty. On frame 267 there is a boldly-posed figure of a lady in a boat, by Miss Pryor. It is a most telling picture, and not at all commonplace. "Family Cares" (274), by Lambert Matthews, is a very pretty picture of a child surrounded by her pets—a dog and some puppies. The baby-faced expression on the wee animals is particularly charming. 277, "Woodland Scenery," is a frame of pictures by the same hand, and the work is of great excellence. The snow picture is very fine, and so is the wood scene in early spring. The small pictures by Robert Terras are quite out of the ordinary, and though entered in the class for beginners, show a considerable amount of artistic knowledge. The "Snow Effect near Markinch" is successful, and "Markinch Burn," with the hoar-frost over everything, is an unusually good picture, and the angler in the foreground displays great courage in remaining on such a cheerless spot. In the "Basket Mender" we have an ambitious attempt, and "A Quiet Moment" is a gloomy interior, with a Rembrandtesque effect of light



"A Stiff Pull" (No. 143). (See page 18.)

and shade, and the figure reading the letter is well posed. Indeed, both these pictures are most effective. In No. 284 we have a picture of a stag with a very puzzled, surprised look. It is evidently an enlargement, but very good, and is the work of R. Mitchell.

CLASS VIII. contains the work of customers of the London Stereoscopic Company, and silver and bronze medals have been awarded. The snow scenes by Mr. A. J. Harrison are very good (296), the snow being particularly delicate, and the one with the sledge carriage is the best of the series. J. R. West's "Five Views" (298) are effective, and the park scene, with cattle, pleases us best. H. Champion has a very fine winter scene, which is a capital illustration of the use of platinum printing for snow effects (306), and his "View in the Yosemite Valley" (299) is a fine photograph of a grand scene. The "Six Views at Moulsey Lock" (310), by C. E. Nesham, are very delicate, and so are the "Snow Studies" by Miss Wilmott (311), while to Miss Sullivan's "Studies" (312), a bronze medal has been awarded;



J. R. West's "Views" (317) have been taken with very rapid exposure, but are, notwithstanding, well exposed, and the water in consequence is very liquid and beautiful. A silver medal has been awarded to them. In one of the "Snow Scenes" (319), by T. G. Munyard,



"Furze-cutters" (No. 156). (See page 18.)

there is a very uncommon effect. An irregular mass of snow shows with great brilliance, and all the rest of the snow is by comparison grey and subordinate. A bronze medal has been awarded. "Bratham Bridge" is evidently a picturesque object, if we may judge by the photograph in frame 321. It is the work of W. Gaddum.



An Angler (No. 170). (See page 18.)

CLASS IX. is devoted to views taken in the United Kingdom by officers in her Majesty's service. Among the views in frame 324, there is a capital picture of boys sliding on the ice, and the one on his back, with his heels in the air, gives additional interest to the scene. Major

Roden may be complimented for this picture, and also for the "Drummer Boys at Marbles" in frame 372, and the bronze medal awarded has been worthily earned. Lieut.-General Lord de Ros, in one of his series of views (328), has a very pretty park scene, with a stream which greatly enhances its beauty. The "Cavalry Studies" 324a, by Major Ashburner, are unusually fine, and have received a bronze medal. The photographs have been made with very rapid exposure, as is shown by the absence of movement in the figures, notwithstanding their very quick movements during the evolutions, and yet the pictures are full of half-tone, and quite harmonious. "Grooming Horses" is also a very admirable production. Lieut. H. A. Conrad has produced some interesting pictures in frame 329. The "Channel Squadron at Sea" is perhaps the best of the series, the clouds being particularly grand. Lieut. C. G. Dicken, R.N., has well-earned the medal awarded to frame 330, for the pictures are all very perfect as photographs; and the light and shade on the "Cameronian Piper" is very artistic. The "Maltese Boats" also are very noteworthy, the reflections in the water being extremely fine. J. L. Ranking's "View on the Leam" (331) is a sunny stream, and the cattle on its banks and the boat afloat all help to give life to a pretty scene. "Combe Dingle, near Bristol," is a good picture; also a lovely sylvan bit is to be found in "Leigh Woods"; and "Clifton Bridge" must not be passed without notice. These are the productions of A. C. Thomson (339). Mr. P. H. Emerson has again scored with his "Four Landscapes in East Anglia," for they have been honoured with a silver medal. They are most artistic, and give a very adequate notion of the Norfolk Broads. The desolate, leafless tree in one of the pictures, and the rude, picturesque little water-mill in another of them, help to give emphasis to scenes that many may regard as dreary, though undoubtedly characteristic. The "Cambridge Views," by C. Percival White (341), are some of them very good—the instantaneous picture of the market-place particularly so. The view of the Cam and the backs of the College is a well-lighted picture, and technically very perfect, and a bronze medal has been awarded to it.

CLASS X. is for the work of members of the Universities and Public Schools. "The Old Mill at San Remo" (345), is a very telling picture of an old house and bridge of a very picturesque character, and there is also "An Old Street in San Remo" (345)—a strangely quaint and tumble-down old bit, very artistically rendered by the Hon. J. G. R. Vereker. The Interiors, by J. L. Benthall, in 346, are fairly good, but do not demand special mention. "The Burn, Gareloch Head, N.B." (348), is a series of four forcible pictures of rugged stream and boulders, selected with great artistic skill by C. E. Nesham. "The Twelve Studies in Platinotype" (349), by the Rev. G. W. Hall, M.A., are effective. The winter scene, with the solitary figure of a man carrying skates, strikes us as the best of the series.

The platinum prints are decidedly better than those of last year. "Ice Rinks at St. Moritz" (354), and "Drear December" (355) are both very fine pictures, rendered in platinum with great success, the expression of desolation in the brimming watercourses and leafless old tree in the latter being much helped by the grey tone of the picture.



## OUT-DOOR FIGURE STUDIES.

BY VALENTINE BLANCHARD.



**I**n the Photographic Exhibition now being held in Bond-street, and devoted to the productions of amateurs only, one cannot help a feeling of surprise at the very small number of figure-subjects to be found there. On glancing round the rooms, plenty of groups may be found, and a great many landscapes with figures introduced; but this is not what is meant, for the figures are merely incidental, and are altogether subordinate in the picture. What we mean is, simple figure-studies, with the background aiding to produce harmony, but quite secondary in importance. In the very fine studies by Lady Roscoe, in the present exhibition, there are two of the kind we refer to. In one there is a fine, weather-beaten man, armed with net and fishing-rod, on some stepping-stones leading across a shallow stream. The light and shade are so fine on the bronzed face and picturesque figure that no one dreams of looking at the background, though it is harmonious and quite in keeping. The other is called "Waiting," and the figure is that of a girl, clad in light dress, sitting on the prostrate trunk of a large tree. The whole of the attention centres on the figure, and the background of trees is completely subordinate to it. Both these belong to the class of subjects completely within the province of photography to render with true artistic effect. If the amateur photographer who desires to succeed in this direction would only take a tenth part of the pains bestowed on a similar class of subject by the painter, he could not fail to produce pictures far in advance of the average of such attempts as have been made up to the present. Of course, it will not do to overlook the fact that the camera sees too much, and the photographer has not the power, possessed by the painter, to select only so much as may aid him to produce the effect desired; and that, while the latter can change, remove, or tone down at will all material not necessary to his final result, the photographer can only do so to a very limited extent indeed.

Too much cannot be said in deprecation of the employment of ill-considered and unsuitable costumes and accessories. The painter of to-day considers no time ill-spent in gathering together real, well-worn dresses, and looks upon a countryman's honeycombed and embroidered smock-frock, or a fisherman's well-greased long boots—when, by an accidental find, they become his property—with as much pleasure as if they were parts of some costly costume. And if such attention to true detail in his picture be important to the painter, how much more should it be so with the photographer, when his camera insists upon telling the truth with such uncompromising fidelity?

One of the most pathetic pictures produced by photography was by the late O. G. Rejlander. It was only a street Arab seated on a doorstep; but it was a *real* London Arab, in miserable raggedness, curled up in a heap, with head and knees together, the face buried in his folded arms. It is not necessary to contrast this simple picture of hopeless misery with those laboured attempts to realise scenes of horror and despair which are too often seen at exhibitions. They are generally so artificial in character that they provoke laughter when they should draw tears from those who look upon

them,—witness the shipwreck scene adverted to on a previous page.

Mr. H. P. Robinson, who has well shown in his fine works the possibilities of photography, particularly in some of his earlier single-figure studies, is a safe master for the amateur to follow; and we would advise him to procure, if possible, "Somebody Coming"—a most natural study of two gleaners near a stile—and "Waiting for the Boat"; for in both these pictures the costumes are picturesque, and yet have all the appearance of belonging to the wearers.

It will be instructive to many who are apt to think that success in photography depends upon the number of plates exposed and developed, to know that Mr. H. P. Robinson has before now planted and arranged his foreground—in fact, planned the essential parts of his *mise-en-scène*—and patiently waited for nature to do the rest, before making the picture.

A short time ago we said the camera saw too much. It follows, therefore, that the greatest care and discrimination will be needed in the selection of suitable material to form the background of the figure picture, for on this will depend the success of the whole.

The great point to be aimed at is simplicity, for there can be no breadth if the parts of the picture of secondary importance are made up of a mass of minute and distracting detail. After all, how little is needed—a rustic porch, a half-open door, a picturesque country stile, the hollow trunk of an ancient tree, or a cleared space in tangled brushwood—any of these, selected with taste and with a clear idea of the part they have to play in the picture, will serve.

Anything worth doing is worth doing well, and the artistic amateur, with plenty of both leisure and means, should be able to produce a class of picture far in advance of all but the most exceptional results achieved in the past, for the rapidity of modern plates has made possible a number of subjects all but impracticable in the days of wet plates.

Figure-subjects can, as a rule, be best produced without sunlight. Of course, there are many rustic subjects where sunlight may be employed with great effect—particularly if the long, glinting light of evening or early morning be called into play. The difficulty in the employment of sunlight is to avoid harshness of contrast and spottiness, and it will only be by the exercise of great skill that breadth in the picture can be obtained.

If a cloudy light be chosen, it will be well to select such a spot that, by the accident of trees or buildings, the light may be compelled to come with greatest force in the direction required, and so flatness and tameness of effect will be avoided; for, if a picture be made with the grey light playing with equal power in every direction, the result must be more or less monotonous.

The description of a figure-subject before us as we write, and the method of its production, will, it is hoped, help to give force to the above remarks. The subject was suggested by an accident. A young lady, by no means in strong health, was amusing herself with her bird on a small piece of grass in a London garden in spring. The sun was low, and, coming over the wall, threw the greater half of the grass-plot in shade. The effect was so soft and beautiful that a tiger-skin was brought out, and a picture arranged. The background was, however, too bare, for nature had not sufficiently awakened from the sleep of winter; and the brick wall, unbroken by any verdure, would not do. The picture was,



therefore, postponed until the autumn, but provision was made for it in the planting and arrangement of the background. In the autumn the photograph was made, and was called a "Siesta," for the model had been away to the seaside, and returned looking so well that the old title, "A Convalescent," would no longer serve.

Now to describe the picture. A young lady in a light dress [chosen and made for the purpose] is reclining on a tiger-skin. The head is resting on the hand, and the elbow is supported by a raised cushion. A light parasol has fallen back, and the interior makes the background for the head. A half-open book has fallen on the grass, which is long, with plenty of clover in it. The summer hat is thrown aside, and the unnoticed bird-cage is near. At the extreme top of the picture the wall shows slightly, but all the rest of the background is made up of foliage, selected to avoid spottiness. The verdure-covered wall runs in perspective to a shady corner, which makes the deepest point in the composition. Those who have seen the picture will scarcely believe that it was produced in a London garden of limited dimensions, for the vegetation was allowed to run somewhat wild in order better to produce the effect desired, and the background has the appearance of some secluded corner in an old park. Now, with all the care taken in the arrangement, the whole result would have been different had sunlight been employed. The picture was suggested by the accidental effect of light and shade noticed in the spring, and the corresponding period in the autumn, when the sun was in the same position, was selected as the right time to make the picture.

The object of going so minutely into the description of this figure-subject is to show that if a particular photograph be worth doing at all, it is also worth all the time and pains necessary to make as complete a success as possible. And, in conclusion, we would advise the amateur to rather make one picture as perfect as he can than to produce a hundred possessing nothing to distinguish them from the mass of work unfortunately only too common in our exhibitions.

## NOTES FOR BEGINNERS.

BY E. HOWARD FARMER.



HAVING decided upon the generally puzzling difficulty, the size he intends working, and obtained a camera, lens, &c., to his fancy, the beginner should attend to a few preliminary points preparatory to commencing work.

I. If the stand be one whose supports can be adjusted to different heights independently of one another, put it up as though for use, screw on the camera, and with the supports sufficiently spread out to give rigidity (the parts touching the ground should be from three to five feet apart, depending upon the height of manipulator), adjust length of supports until the centre of the focussing-screen is on a level, or a little below the level, of the eyes; in other words, to a comfortable height for working; then take off the camera, bring the three supports of stand close to one another, and make them all the same length without altering the height; finally, make marks on the fixed and sliding portions of the supports, so that the stand can always after be readily put up true and flat for ordinary work on level ground.

II. Put up the stand, screw the camera upon it, but not tightly, and with the aid of a T-square adjust the camera on the stand so that its front is exactly at right angles with one of the supports—*i.e.*, the lens looks straight along the support, and then, without any shifting, clamp the camera with the screw tightly to the stand (the same adjustment may be made if the lens is in the centre of the camera-front by simply tilting up the front support until an image of its point can be obtained on the focussing-screen, and then fixing the camera when the image is seen on the centre, laterally, of the ground-glass) and make coincident marks on the base of camera and on the stand-top, so that the camera may readily, when desired, be clamped in the same position. This adjustment is principally useful when focussing buildings, interiors, and similar subjects.

III. Carefully rule in pencil, on the rough surface of the focussing-glass, and by the aid of a T-square, one or more rectangles for aids in focussing and composition. If the camera is larger than the smallest, or  $\frac{1}{4}$ -plate size, these rectangles should be of such dimensions as to just include the amount of subject which can be taken on the smaller-sized plates; for instance, a whole-plate camera should have two rectangles of  $6\frac{1}{4}$  in. by  $4\frac{1}{2}$  in., and 4 in. by 3 in. respectively, for half and quarter-plate pictures, and, if the camera is a square one and pictures with the longest side vertical are taken without shifting the camera or back, these rectangles should be duplicated in the opposite direction. The centre of the ground-glass should also be marked with a small cross.

These points being attended to, I will proceed with the first operation necessary in taking a photograph,—technically known as *focussing*.

But before giving details of any operation, I will for a moment call attention to some important first principles which must always be kept in mind. Ordinary photography may be divided into two entirely distinct processes or operations; the first being the production from nature or any object of a photograph which is useless in itself, and which, viewed as a transparency, represents the whitest portions of the subject by opacity, and the darkest or blackest portions by transparency, *i.e.*, in which the lights and shadows are reversed. Such a photograph is technically known as a *negative*. The second process consists in the production of a print or prints from the negative, and is generally termed *printing*.

The beginner should devote the whole of his attention and energies to the production of good negatives, for in producing them of good quality and excellence consist nine-tenths of his difficulties, and every defect in the negative is faithfully transmitted to its offspring, the print. I shall, therefore, first treat only of the production of negatives.

The technical excellence of a negative, presuming the apparatus, dark-room, chemicals, &c., are in proper condition, depends upon several factors, which are:—

1. Correct *focussing*.
2. Correct *lighting*.
3. *Good quality* of the sensitive film.
4. Correct *exposure*.
5. Correct *proportion* of ingredients in developer.
6. Correct *development*.

I cannot too strongly impress upon the beginner attention to *all* these factors. In proportion as they (or any of them) are incorrect, so will the negative suffer in quality.

(To be continued.)



## Apparatus.

### A NEW CAMERA.

**T**HE Camera Obscura invented three centuries ago by the Neapolitan philosopher, Baptista Porta, and which may be regarded as the very germ of the Art of Photography, has since appeared in various forms. At the

Crystal Palace, and other show-places, is seen the familiar dark chamber, furnished with a whitened table, upon which the sun-pictures are projected by a lens or prism above. But in a smaller form the Camera Obscura has figured for many years in the toy-shops. Most commonly it appears as a small box with a lens at one end. The image formed by this lens is received by a sloping mirror inside the box, and is reflected by that mirror upon a piece of ground-glass placed horizontally above it. The operator, with his head covered with a cloth, sees plainly upon this ground-glass screen a picture of the object which at the time happens to be in front of the lens. This form of Camera Obscura can be so constructed that it will not only form a toy of passing interest, but will represent a photographic apparatus of no despicable kind. In one respect it is superior to the more ordinary photographic camera—for it

is self-contained, the sensitive plates, and even the focussing-cloth, forming part and parcel of the arrangement. By reference to the cut, it will be readily seen how the various conditions necessary in taking a photograph are maintained. The apparatus is shown partly in section, so that its various internal parts may be observed.

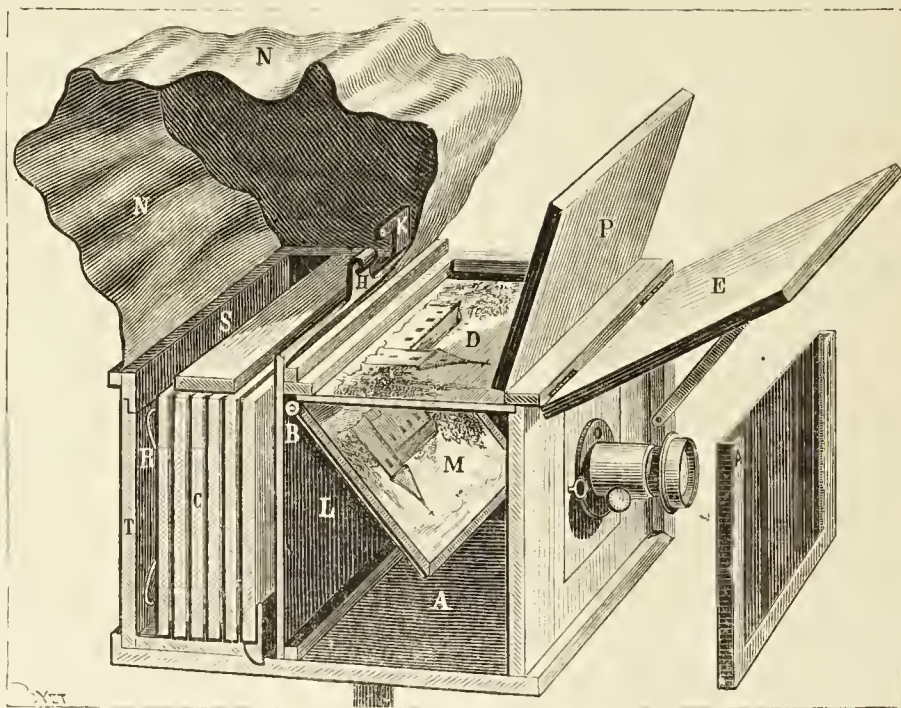
First, as to the focussing arrangements. A lens of short focus, having a rack-work adjustment, is screwed upon a piece of board. This board fits into a square opening in the front of the Camera by a screw. When not in use it can be reversed, so that it is then safely put away inside the Camera, the board E being closed upon it. This board, when the apparatus is in action, acts as a sky-shade to the lens, as shown in the illustration. The image formed by the lens is received upon the mirror M, and is reflected by that mirror to the horizontal ground-glass screen D. Here we have another hinged lid, which serves as a shade for the screen when a picture is being focussed, and as a protection for it when work is over. The normal position of the mirror

is at an angle of 45 degrees, but it can be pivoted up close to the ground-glass above by turning the button B, which projects outside the Camera. L is a movable shutter, which fulfils the purpose of the shutter in an ordinary dark slide; it protects the plates behind it from the influence of light until the right moment. Behind it are stored gelatine plates, C, each in a special form of frame, shown in detail in front of the lens. These frames, or carriers, are pressed tightly together by means of springs, R, at the back of the instrument, and which are affixed to the door T. This door gives access to the apparatus for the purpose of furnishing it with its stock of plates for a day's work. H is a hook by which the shutter L can be raised during exposure, and K is a plate-lifter, by which an exposed plate can readily be raised from its front position. N is a bag of light-tight material, which completely closes in the back part of the apparatus. It is furnished with a sleeve (not shown in the cut) through which the hand and arm can

be thrust, in order to carry out the necessary manipulations.

Let us now describe the actual operation of taking a photograph with the apparatus, which may be conveniently placed on a low tripod stand—for it must be remembered that the focussing-glass is at the top, and must, therefore, be low enough to be looked down upon from above.

The mirror, M, having been adjusted to the correct angle by the button, B, the picture is properly focussed on the screen. This having been done, the button is once more moved so



A New Camera.

that the mirror assumes a horizontal position close against the ground-glass. The lid, P, is then shut down. The lens having been capped, the hand is introduced into the sleeve, and the shutter, L, is raised by the hook, H. All is now ready for exposure, and if all the parts of the apparatus have been properly adjusted by the maker, the image which just now fell upon the focussing-screen will, when the lens is uncovered, be projected upon the front plate of the series, C. The exposure having been made, the shutter, L, is once more lowered, and the exposed plate is raised by the lifter, K. It is then grasped by the hand and lifted entirely out of its place, to be reinserted against the springs at the back of the series of frames. These springs immediately push the whole series forward, so that the second plate occupies the position vacated by the first one, and all is ready for a second exposure. It is obvious that a careful record must be made of the plates as they are exposed, in case the first one should be made inadvertently to take a second impression. This

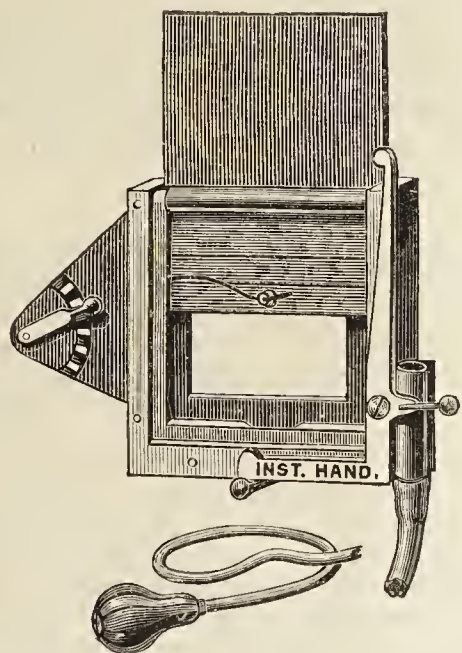


Camera is a novelty which will commend itself to those photographers who wish to work with a self-contained apparatus, which looks like an ordinary box when not in use.

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If ever a complete history of photography comes to be written, the various instantaneous shutters which have been invented will require a volume to themselves. Every material and every known mechanical agent has been called into requisition for these exposing automata, and the man who would devise one of new form must be endowed with the inventive faculty very highly developed.

Two shutters of novel design have lately come into the market, and both are worthy of some detailed description. The first which we notice is called the "Right-about-Turn" shutter; this curious name being due not only to the peculiarity of its movements, but also, no doubt, to the fact that its inventor is a gallant officer in her Majesty's Service. The shutter, which is shown in the annexed cut, consists of a vulcanite frame. Attached to this frame is a metal backing, provided with collar to fit the hood of the lens. The metal plate is prolonged at

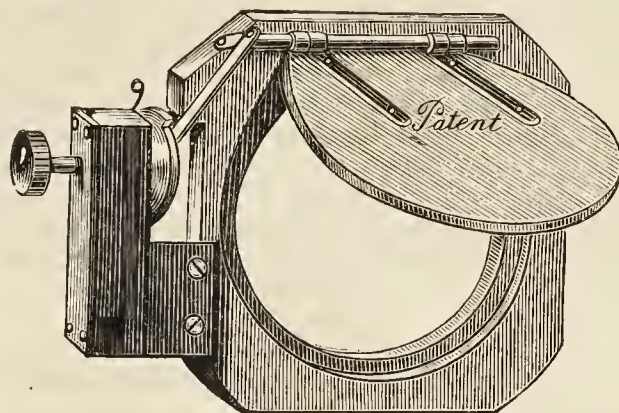


the left-hand side (see cut), and forms there a triangular box, about which more presently. The shutter proper is made of wood, and has at one end a double hinge, made with leather, exactly after the style of the shutter of a dark slide. In the picture this double hinge is indicated by the two black lines which cross the shutter at its lower end. Below the hinge is seen a steel wire spring, which passes through a small staple affixed to the shutter. The other end of this spring is coiled in the triangular box already referred to, and its tension can be regulated so as to vary the speed of the shutter by the little index hand seen outside the box. To set the apparatus, the shutter is raised until the hinged part is against the round bar shown at the top of the frame. The shutter is then doubled over forwards, and is held to its place by the L-shaped catch on the right-hand side. When this catch is released by hand, or by pneumatic ball, the shutter instantly opens, as a flap is pulled over by the force of the spring, and what was just now its upper part descends to close the opening of the frame. This little apparatus is wonder-

fully ingenious and complete. We fancy, however, that it might be improved by making the shutter of some less brittle material. Aluminium might be tried with advantage, if that metal would admit of a light-tight hinge.

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THE other shutter to which we call attention is named the "Economic"—we presume on account of its low price. It might, too, be named so for its small size, for it exhibits such economy of space that a quarter-plate one can easily be put into the waistcoat-pocket. This shutter is made of ebonite, with the flap of metal. By the action of the thumb-screw, shown on the left-hand



side (see cut), the flap is raised to the horizontal position, and by continuing to turn the screw, it once more descends and closes the lens. But this action has put tension on a small watch-spring—not shown in the picture—so that the next exposure can be brought about instantaneously by simply touching a button provided for the purpose.

It will be noted that the "Economic" shutter has no means of regulating the length of time during which the plate is exposed. We do not consider this omission to be a fault. If a shutter works quickly enough for figures in motion, it will do what is required. In using it during very bright weather and for seascapes—when it might reasonably be thought that a plate might receive too much exposure—the risk can easily be obviated by inserting a smaller stop in the lens.

PHOTOGRAPHY AND LIGHTNING.—In most physical text-books the duration of a lightning-flash is stated to be an infinitesimal portion of a second, and is compared with the duration of a spark from a Leyden jar. As an illustration, the following experiment is commonly described:—The operator turns a disc, painted like a wheel, with black spokes on a white ground. This wheel is turned at a tremendous rate by means of multiplying gear, and when so turning it is illuminated by the electric spark, with the result that, to an on-looker, it appears to be perfectly still. These results, hitherto accepted as being correct, are called in question by experiments made recently by Mr. A. S. Barber, of Philadelphia. This gentleman claims to have made two negatives of landscape subjects at night-time, the only illumination being from a single lightning flash. Both pictures exhibit foliage which has moved during exposure. The journal of the Franklin Institute, which publishes this strange information, will not vouch for the accuracy of the deductions made. We are inclined to follow the same course.



## Sayings and Doings.



LEARNED photographers, whose aim is to step out of the well-beaten track of ordinary work, will do well to visit the various exhibitions of paintings which are now open. Many a lesson can be learned by studying the grouping in the figure-subjects, and the effects of light and shade in the landscapes. Such effects are possible in photography, when sun and fleeting clouds are available. The too-common failing of colour-blindness is a positive advantage here, for the student is able to divest from his consideration the beautiful harmonies of tint which often cover a multitude of faults. A visit to Mr. Whistler's gallery in Bond-street, among others, will not be amiss. It is true that the various notes, nocturnes, and harmonies may appeal to a higher sense than our black and white art is capable of appreciating; but, speaking photographically, it must be admitted that his pictures are lamentably out of focus.

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### OVERHEARD AT THE COLONIES EXHIBITION.

*She*: "How is it that these photographs are so much crisper and brighter than those you have taken in England?"

*He*: "Well, you see, the—ah—climate, and the—ah—air generally in these—ah—colonial places is so clear that a fellah can take anything at any time. No London smoke there."

*She*: "But, surely, you can't say that London smoke affected the pictures you took at Cheltenham!"

*He*: "Well—ah—it blows over that way sometimes, don't-cher-know."

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OUR contemporary the *British Journal of Photography* recently, in an interesting article, raised the important question, "Does prolonged washing conduce to permanency of prints?" The results of experiments tried seem to show that this question must be answered in the negative. One case cited is particularly worthy of attention. "In conversation recently with a gentleman connected with a large printing establishment, where the prints are allowed to remain washing from Saturday afternoon till Monday morning, he informed us that their Monday's prints were never so bright and vigorous as those of other days. Particularly, said he, is this the case during hot weather; adding, that then many prints had to be rejected on account of yellow spots, which were never seen at other times." We quote this evidence at length, because it closely agrees with certain experiments made some months back by ourselves. It is quite possible that prolonged soaking may act upon the albumen as injuriously as it does upon gelatine. The obvious remedy is to eliminate the fixing salt as quickly as possible, and, luckily, there are in the market washing-machines, both great and small, which will well accomplish this end.

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IN Mr. Greenwood Pim's paper upon "Photographic Printing Processes," read before the Camera Club, on

the 22nd ult., there was a reference to Platinotypes, which all well-wishers of that beautiful process will heartily endorse. The lecturer remarked that it was a great pity that the Platinotype Company found it necessary to choke their infant as they had done, by requiring licences to be taken out and paid for, all materials to be obtained direct from the Company, &c. Had they seen their way to put the paper on the open market, so that it could be obtained from any dealer, there would be ten times the demand for it which there is at present.

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ANOTHER little bit from Mr. Pim's paper is worthy of remembrance. We mean his partiality for starch as a mounting medium for prints. We quite agree with him that there is nothing better for the purpose. The best starch we find to be that known as "Oswego," and the best method of preparing it is as follows:—Rinse out a basin with boiling water, and place in it about an ounce of the dry starch. Add sufficient warm water to bring it to the consistence of thin cream, and, at the same time, rub down the lumps with a spoon. Before the starch has time to subside, pour upon it boiling water, stirring it at the same time until it thickens. When this occurs, beat up the mass vigorously with the spoon, and add a small quantity more water, or it will be too thick. Wait until the starch is moderately cool, and apply it to the back of the damped print with a hog-hair stencil-brush.

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AT the Camera Club, on the 29th ult., Mr. A. R. Dresser, the energetic hon. secretary, read a most interesting paper upon "Enlarging." He dwelt upon the various methods which he had tried, described them in detail, and handed round to his audience specimens of his work, printed upon different kinds of commercial quick-printing paper. These specimens proved most conclusively that Mr. Dresser is a first-rate worker. Their detail was so perfect that it was difficult to believe that they were not taken direct in the camera. Mr. Dresser gave preference to enlarging pictures by daylight rather than by lamp-light with a lantern. His remarks were listened to with the greatest interest; and a subject which might, in other hands, have easily assumed a sombre tone, was relieved by little touches of sly humour, which seemed no less acceptable to his hearers than the really valuable information which they received.

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THE Oxyhydrogen light is one of great importance to photographers, and few who use it for lantern projection—and have, therefore, at hand the necessary apparatus for producing it—do not employ it for copying and enlarging. Its great merit for both purposes is that it differs from fickle daylight in representing a fixed quantity, so that if the worker has obtained a certain result on one occasion with a given exposure, he may be sure of repeating his success without difficulty. In London and large towns, especially in the winter months, when, from want of light, or on account of yellow fog, all ordinary photographic work must be abandoned, the lime-light is a welcome friend. Now that oxygen and hydrogen are supplied commercially in iron bottles, the tedious operation of gas-making can be dispensed with, and the light can be obtained without trouble,



danger, or delay. The recently-invented regulators to fit on these bottles, which have been patented by Messrs. Beard & Oakley, are a great help to lime-light workers. By their help the gas from the bottles, instead of rushing out with terrific force directly the stop-cock is turned, flows forth with all the gentleness ensured by the use of india-rubber gas-bags.

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IN the last number of the *Journal* of the Chemical Society there is a paragraph of interest to workers with the lime-light, being an abstract of a paper which appeared in a foreign publication:—"A blowpipe for burning oxygen and coal-gas is described. Small discs of zirconia, 15 mm. in diameter, and about 4 mm. thick, are made by pressing very finely-powdered zirconia (prepared by heating zirconium chloride) into a steel mortar, about 15 mm. in diameter; they are then heated strongly, and fixed on to a platinum foil. These may be heated in the oxy-coal-gas flame several hundred times. The zirconia light is very intense, and gives a continuous spectrum."

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THERE is now on view, at the rooms of the Society of Arts, an exhibition of works of art by the great Japanese masters, ranging from the seventh century to the present date. These works are lent by Mr. Ernest Hart, and there is little difficulty in obtaining permission to see them. The Japanese are so truthful and earnest in their work that something valuable can always be learned from them. Their notions of perspective are somewhat crude, it is true, but this does not affect the artistic arrangement of a subject, in which the Japanese are so pre-eminent. We may mention that masters of schools of art and heads of firms of technical art industries will receive admission for parties on application to the Secretary of the Society of Arts, John-street, Adelphi.

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OUR contemporary, *Nature*, publishes the following note relative to solar photography:—"In Appendix III. to the 'Washington Observations for 1882,' Professor Harkness, U.S.N., commenting on the difficulty of preventing the solar rays from disturbing the adjustments of a Meridian instrument employed in observing the sun, points out that photography seems to afford an escape from the difficulty. He suggests that a transit-circle might be so constructed that its eye-piece could be readily removed and a sensitive photographic-plate inserted just behind its wire system. Then, with the eye-piece in position, stars can be observed, and the instrumental constants determined in the usual way; while at noon, a photographic plate can be inserted, and an instantaneous exposure will suffice to give an image of the sun, with the transit and declination wires of the instrument imprinted upon it. The position of the sun's centre relatively to these wires having been measured, this, together with the instrumental constants, the circle-reading and sidereal time of exposure, will give an exact determination of the sun's right ascension and declination. As the instruments will be exposed to the sun's rays only for a few thousandths of a second, no disturbance of its constants can, Professor Harkness thinks, arise from that cause; and the results, in his opinion, would probably be superior in accuracy to any hitherto obtained by the usual methods.

THE following translation of part of a letter from the Parisian photo-astronomers, MM. Henry, relating to their discovery of nebulous matter in the Pleiades and which appears in the "Monthly Notices" of the Royal Astronomical Society, will be read with interest in conjunction with the article by Mr. R. A. Proctor, in our present issue. It gives a very good idea of the great difficulties of the work in which they are engaged:—

"We have, in reality, obtained upon all our photographs of the Pleiades feeble nebulous trains, or traces, near Merope; but, as you will be able to see by the proof that I have the honour to send you, this nebula does not in any way resemble that given by Tempel. It has, on the contrary, much analogy with that seen by Mr. Common, which he published (in the "Monthly Notices," I believe) in 1882.

"In the accompanying card, as you will be able to see, I have a little accentuated, by means of white chalk, the different luminous spots which encircle Merope. It is the exact reproduction of the original photograph. These nebulous traces are extremely feeble, and scarcely appear at all upon the paper print.

"You can also perceive upon the original a very feeble luminous trace starting from Electra, and directing itself towards the East, but it is barely visible, and such as it is we could not obtain it with less than three hours' exposure. Let it be well understood that I have exaggerated the chalk indication upon the proof. I had intended, before sending the Royal Astronomical Society a complete chart of the Pleiades with the nebula of Merope, to endeavour to obtain this last a little more intense, if that had been possible. But, unhappily, the weather has not been sufficiently fine, and we must content ourselves—for the present at least—with what we already have."

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OUR frontispiece, the portrait of our much-admired American cousin, Miss Mary Anderson, in the character of Parthenia, requires a few words of explanation. To the uninitiated, it appears to be a carefully-executed engraving from the original photograph, for it has all the delicate gradations of tint observable in such work. But the picture does not owe its existence to the hand of the engraver in any way whatever. From first to last it is due to photography. By the Meisenbach method, by which this work is done, any photograph can be transformed by mechanical means into a block ready for the printing-press. This process has a wide future before it. Let us instance the case of a traveller, who takes with him on his journeys a camera—and most travellers do so nowadays. He wishes to publish an account of his adventures in a land, perhaps, where no white man has ventured before him. But no amount of word-painting can convey to his readers such a correct idea of what he has actually seen as can the photographs which he has brought home with him, and which, under past circumstances, would be consigned to an album for the edification of his private friends. By the help of the Meisenbach process, his pictures can be quickly turned into typographic blocks, and can be printed, together with the letterpress, in the book which he writes. As a good example of this class of work, we may refer to that admirable book, published last year, "Under the Rays of the Aurora Borealis," by Sophus Tromholt, which is mainly illustrated by Meisenbach blocks.



## Reviews.

*The Grammar of Lithography.* By W. D. RICHMOND.  
Second edition. (Wyman & Sons.)

THE art of Lithography is now so identified with camera work that no photographer can afford to be ignorant of its main principles, even if he be unacquainted with its practical details. This book will give him a knowledge of both, in a very clear and pleasant manner. In twenty-four chapters the author has included an immense amount of information relating to Lithography in all its various branches. The chapter with which we are chiefly concerned is that on Photo-Lithography, which contains a carefully-written account of the manner in which a line picture can be transferred to stone. We are also made acquainted with the beautiful Collotype process, by which all the gradations of a delicate photograph can be made to yield impressions in printing-ink. The modern photographer should not be what is called a "groovy" man. The adjective may be condemned as bad English, but it is wonderfully expressive. Our Poet Laureate, in giving us a word-picture of the non-progressive sleepiness of village life, speaks of the same wheel traversing the same rut year after year, and this word "groovy" is applicable in the same sense to a man who jogs continually along the same road, careless of the knowledge he would gain by occasionally straying into by-paths. The by-paths of photography are increasing day by day, and its application to the lithographic stone is one of them. Increasing competition affects photographers as it does all, and the man who knows most of the various applications of his art has the best chance. At any time he may be suddenly called upon to produce negatives to be used for purposes of illustration. If he has mastered Mr. Richmond's book, he will know the type of negative required, and the capabilities of the various processes to translate it into a printed picture. The letterpress is explained where necessary by the help of capital illustrations.

✱ ✱ ✱

*Zincography.* A Practical Guide to the Art as practised in connection with Letterpress Printing. By JOSEF BÜCK.

THIS book, issued by the same publishers, is another work of value to the photographer. Its fault is that it is not quite full enough in its explanations. For this reason it should be read in conjunction with the "Grammar of Lithography," which gives much information which many will require if they wish to practise Zincography.

✱ ✱ ✱

*Photography for Amateurs.* By T. C. HEPWORTH.  
(Cassell & Co., Limited. 1886.)

A NEW and enlarged edition of Mr. Hepworth's concise and handy manual has just been issued. Of the first edition, a contemporary wrote:—"It deals with everything which an amateur should know—not from a hazy, semi-scientific point of view, but from a really practicable standpoint. All the many difficulties which amateurs are likely to encounter, and the many errors into which they are almost certain to fall, are foreseen and provided against, while numerous ingenious hints are given so as to make the amateur's labours as easy as possible. Mr. Hepworth has an intimate knowledge of photographic

science, and his book will be welcomed by all amateurs." The new edition is considerably enlarged and brought down to date. It is, therefore, likely to command an even wider appreciation than that accorded to former issues.

### NOTICE TO OUR READERS.

The publication of the first number of THE CAMERA was originally advertised for May 15. It was found, however, advisable for many reasons to postpone its date of appearance until the 1st of the following month. The chief reason for the change was that it would be far more convenient for our country subscribers, already numerous, to receive THE CAMERA with their regular monthly magazine parcels. This alteration is more convenient also to the Agents through whom those parcels are received. THE CAMERA will, therefore, be issued on the 1st of every month.

## THE CAMERA :

A Monthly Magazine

FOR THOSE WHO PRACTISE PHOTOGRAPHY.

JUNE 1, 1886.

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### NOTICE.

The EDITOR will be glad to receive literary and artistic matter of general interest to Photographers; and begs to direct attention to the following rules:—

All communications should be addressed to the EDITOR OF THE CAMERA, 15, Bedford-street, Covent Garden, London, W.C.

Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.

All matter must be authenticated by the name and full address of the sender, both as a guarantee of good faith and to secure safe return if ineligible.

If stamps be sent to cover cost of postage, the EDITOR will do his best to ensure the safe return of contributions which he is unable to make use of.



# ✱ THE CAMERA ✱

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

VOL. I.—No. 2.]

JULY 1, 1886.

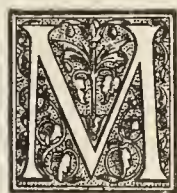
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## THE SWING-BACK.

BY CAPTAIN W. DE W. ABNEY, R.E.



MOST cameras nowadays have an appendage which is technically called a swing-back, and, being attached to it, we must suppose it has a use of some kind. In the old days of photography, the swing-back was usually absent—in fact, in all the old drawings of cameras the back of the camera is a solid piece, and quite on a par with the heavy and cumbrous dark slides which were then extant. As the art-science got out of its nursery state, in a few old catalogues of photographic apparatus, the swing-back is to be found figured here and there, but it was by no means universal. Even in the present day, cameras are to be got which do not possess this useful adjunct, and it can only be supposed that it is absent owing to, at all events, some of the dabblers in photography being unacquainted with its use. My present object, then, will be to say something regarding the utility of this swing-back arrangement. Let us start with a simple experiment to begin with. Instead of placing the lens in the camera-front, let us paste over the opening intended for it a piece of black paper, and then near its centre carefully pierce a hole with a good-sized pin. Having performed this operation, go outside your door into the road or street, and carefully level the top of the camera by means of a spirit-level. Then place your head beneath the focussing-cloth, and look at the faint image that will be seen on the ground-glass when the pin-hole is pointing—if a pin-hole can be said

to point—towards the front of the house, which we will suppose to be well lighted. It will be seen that the image is inverted, and that the door-jambs and the sides of the window-frames are shown strictly parallel to one another—always supposing the builder has used a plumb-line in his building operations,—and that the horizontal lines which are receding from you make angles with the horizon, which give strictly correct perspective.

If your house is a tall one, it is more than probable that your picture will not include the top windows; and, in order to view them, it will be necessary to tilt the base of the camera at an angle, and so to make the focussing-screen out of the vertical plane. Now look at the inverted image which is on the ground-glass. It will be seen that the lines of the jambs and sides of the windows all tend to meet in a point which would be somewhere in the skies, and there would be a look of unreality about a picture taken with such an image, which to the educated mind would be absolutely distasteful, if nothing worse.

Next, without moving the camera, alter the swing-back so that its plane is in the vertical, and again view the image. The vertical lines will now all appear parallel, and the excruciating distortion before present will have disappeared. The photographer should be a person who is much addicted to asking the “reason why” of everything, and should not be content in this case without getting an answer which will satisfy him.

Let us see if we can explain how this occurs. Let the camera be moved towards one window which is slightly raised above the camera itself. To include it on the focussing-screen a tilt must be given to the camera.



Suppose we take a bird's-eye view of the scene from a balloon hovering directly over the camera, say. We should then see the top and the bottom of the outside of the frame of a window as one line,  $A B$  (Fig. 1), and we should see the tilted focussing-screen, as  $C D E F$ ,  $C D$  being the bottom, and  $F E$  the top, of it. We will further suppose that the focussing-screen just takes in the height of the window. The rays from the top of the frame going through  $O$  (the pin-hole) would strike the bottom ( $C D$ ) of the focussing-screen, and the points  $A$  and  $B$  would be shown by  $a$

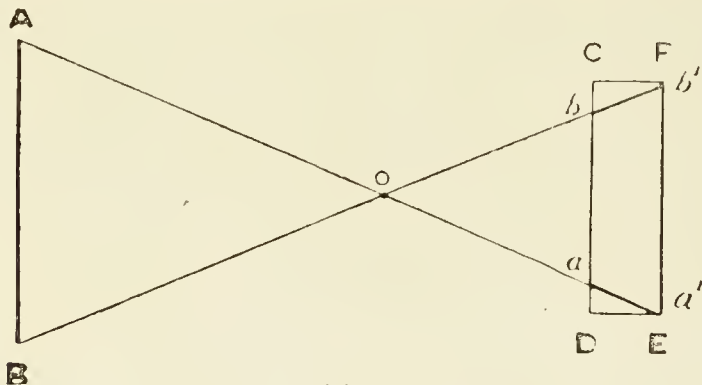


Fig. 1.

and  $b$  on it; those from the bottom of the window-frame would strike the top,  $E F$ , of the focussing-screen, and the points  $A$  and  $B$ —which in this case represent the bottom corners of the frame—would be shown by  $a'$  and  $b'$  respectively; that is, the image of the top of the window would be narrower than that of the bottom. Thus the image of the vertical lines of the window-frame represented in plan by the points  $A$  and  $B$  would not appear parallel to each other in the image, since parallel lines are equi-distant from each other. In other words, they would converge towards the top. If, on the other hand, the focussing-screen is placed vertically, its plan from the balloon would be represented by a line—say  $C D$ . Then the rays from  $A$  and  $B$ , both top and bottom of the window, would appear to strike the focussing-screen in  $a b$ —that is, the image of the vertical lines would be exactly the same distance apart at the top and bottom, and, therefore, be parallel. In the one case, then, the vertical lines in the picture would appear to converge, and in the other to be correct.

In the above figure we have supposed the front of the camera to be parallel to the window-pane, but if the reader constructs a diagram for himself in which such is not the case, he will arrive at precisely the same results.

So far, then, we have seen that a swing-back, with a pin-hole substituted for the camera, has given us the power of obtaining vertical lines in a picture. If, instead of a pin-hole, we substitute a non-distorting lens, such as a rapid rectilinear, we get the same results. A lens is a means of using

a large hole instead of a pin-hole, the glass being so shaped that the rays from a distant point passing through each part of the hole converge to a point which is known as the focus. It is evident that, such being the case, the same line of argument as given above applies with equal force to a lens as to a pin-hole.

I have used the word “non-distorting” above advisedly. Single lenses with a stop in front, such as the ordinary landscape lens, must of necessity show what is known as barrel-shaped distortion. In some cases the swing-back enables the apparent distortion to be minimised. Suppose we are photographing the window-frame as before, or any object with vertical sides, it will appear as shown in Fig. 2 if it occupies the whole height of the focussing-screen. If, however, it only occupies the top half of the screen, it will appear as shown in Fig. 3. Now, by pulling the top of the swing-back out from the camera, so that the top has a greater distance from the lens than has the centre, we can get an image in which the distortion will be very much diminished, and appear more like Fig. 2, but with very considerably less curvature. This fact is very often useful in photographing a moderately-distant view of such a subject as a castle or church, &c. The inverted image probably occupies the top half of the focusing-screen; the sky and trees, and other objects in which vertical lines are not apparent, occupying the bottom half. When the swing-back is used judiciously, with such a landscape lens the straight and vertical lines in the picture, instead of appearing tumbling down and curved, may be made to appear on the focussing-screen as straight and non-converging.



Fig. 2.

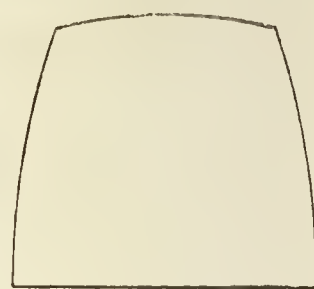


Fig. 3.

Again, in a landscape in which the verticality of lines is not of the supreme importance that it is in the photography of architectural subjects, the swing-back has another important use.

The focus of near objects is further from the lens than more distant objects. Should a foreground occupy the top half of the focussing-screen, as it generally does, if the swing-back be kept vertical it often requires a very small stop to be used to cause both this part of the picture and the distance to appear properly defined at



the same time. If, however, the top of the swing-back be pulled out, the increased focal distance from the lens required for the foreground can be obtained without sacrificing the distance, which is usually on the middle of the focussing-screen.

To sum up, then, we may say that a swing-back is useful—

1. For obtaining vertical lines with a non-distorting lens.
2. For obtaining approximately vertical lines when using a landscape lens.
3. For obtaining a sharper image of foreground and distance than can be obtained except by the use of a very small stop.

## A WELL-APPOINTED STUDIO AND DARK-ROOM.

BY THE EDITOR.



None of the few fine days by which May tried to support the fiction that she was "a merry, merry month," I betook myself to Bexley Heath, at the kind invitation of Mr. A. R. Dresser, the genial honorary secretary of the Camera Club. To the tired Londoner a day in the country is always a

photographic studio and dark-room, and which it is my purpose in this article to describe in detail.

This building is no mere temporary erection, such as often has to do duty for an amateur's studio, but is built of brick as firmly as an ordinary dwelling-house—more firmly, indeed, than many pretentious residences in the metropolitan suburbs. Perhaps the jerry-builder has not yet reached out his unclean hand to quiet Bexley Heath; or, what is more probable, Mr. Dresser, who is a thoroughly practical man, has been too wide awake to let scamped work pass his scrutiny. However that may be, the result is a well-built, comfortable house of two rooms, one being the studio for portraiture and the other smaller apartment the laboratory and dark room. The disposition of the various arrangements will be understood from the ground plan of the building shown at Fig. 1.

It will be seen that the building lies north and south. On its western side—the lower side in the plan—it is plentifully supplied with glass, *ggg*, and this glass is also continued upwards, forming the slope of the roof on that side. On the other side, and in all other parts, the roof is slated. *C* marks the position of the camera-stand, and *pp* is a raised carpeted platform for the accommodation of sitters. *WW* are windows facing a wood, through which a soft reflected light comes of just sufficient

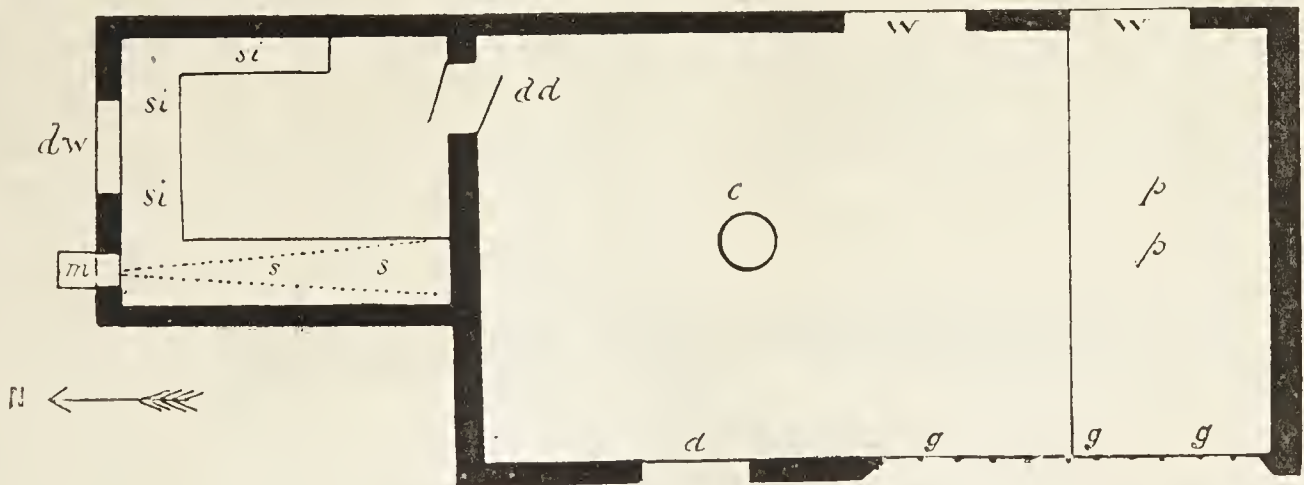


Fig. 1.—Ground Plan of the Building.

treat, especially if the neighbourhood be a beautiful one. And certainly no one who travels through the pretty Kentish scenery that leads towards Bexley can complain on that score. Arrived at the station, I found my host waiting for me in a pony-carriage, drawn by the two little animals which have figured in so many of Mr. Dresser's photographs. A pleasant drive through leafy lanes, up hill and down dale, with the branches of the trees often meeting above our heads, at length brought us to Mr. Dresser's house, which stands alone in its own surroundings of wood and orchard. A few yards from the house is the building which is fitted up as a very complete

intensity to light up the dark side of the subjects. *d* is the entrance door, and *dd* is the double door leading into the dark room. By this precaution no flash of white light is inadvertently shed into the room when any one enters it. The remaining reference letters to be explained are: *dW*, dark-room window; *si*, sinks; *ss*, slate slabs; and *m*, a sloping mirror, throwing white light through an aperture in the wall for enlarging purposes, to be presently more fully described.

Fig. 2 introduces the reader to the southern end of the studio. Here is the raised platform already mentioned; at the back of which is a kind of permanent background, made to look as much like a



drawing-room wall, and as little like a stereotyped photographic background, as possible. It has a wall-paper and a dado. Pictures are hung on the wall, and some old oak furniture is lying about ready for instant use. Should the sitter prefer an open-air representation, a background, on its roller—shown in the drawing—can be rapidly let down, and the scene is changed. Fig. 2 gives a clear idea of the arrangement of the glass portion of the studio, and of the position of the blinds for controlling the amount of light. These blinds are of deep blue, and seem to be of some light material resembling silk. The three vertical ones are on rollers like ordinary window-blinds, and are pulled up and down in the same manner. But those which govern the light coming from the sloping glass roof have to be worked in a different manner. They are, as will be noticed, in three divisions, bounded by long iron rods, which are fixtures. Each blind is fitted at top and bottom with brass curtain-rings, and these rings run on the iron rods. The sliding curtains are easily brought together or moved apart by touching them lightly with a stick. That part of the roof of the studio which is situated above the camera is filled in so as to form a convenient loft, where negatives and all kinds of accessories can be stored. It is reached by a ladder, which can be attached in a moment, but which is generally hung on the wall, out of the way.

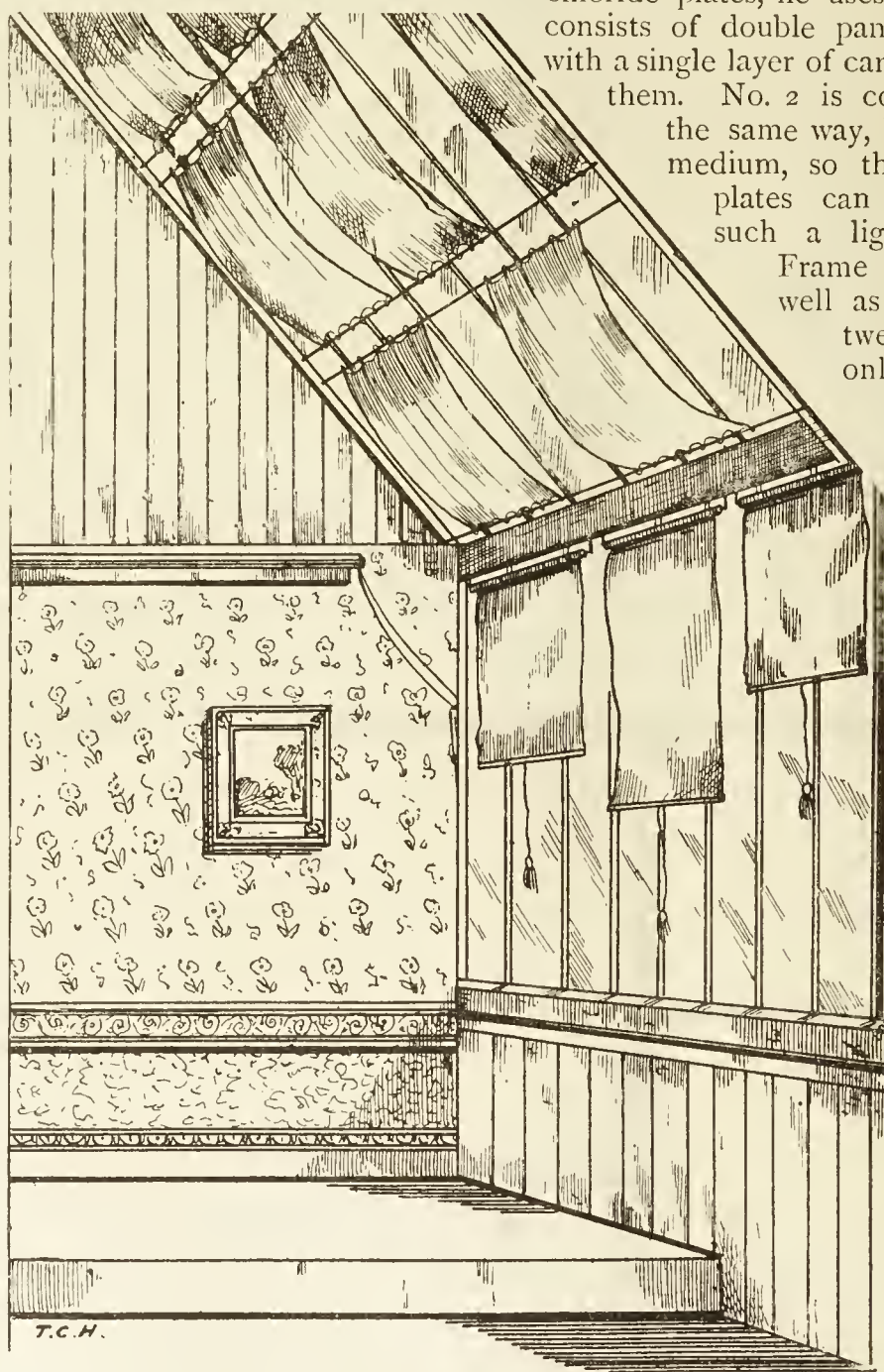


Fig. 2.—Interior of Studio, showing arrangement of blinds, &c.

Passing through the double doors I found myself in the dark room—but it did not happen to be dark at the moment, for the window was open and unprotected. It is furnished with grooves at the sides, and in these grooves can be slipped framed screens of non-actinic material, each frame being of a different degree of intensity. Thus, supposing that the operator is engaged in handling chloride plates, he uses frame No. 1, which consists of double panes of ordinary glass with a single layer of canary medium between them. No. 2 is constructed in exactly the same way, but has *two* layers of medium, so that ordinary bromide plates can be manipulated by such a light without danger.

Frame No. 3 has ruby as well as canary medium between its glasses, and is only required when very sensitive materials are in use. One more screen is ready for occasional employment, and that is perfectly opaque. Its use is to place the room in utter darkness for periodical examination for the detection of pinholes. The best materials will shrink and warp under certain conditions of weather, and this last precaution in our changeable climate is by no means an unnecessary one. Daylight is, of course, the main source of illumination for this dark room window, but for night-work provision is also made.

Outside the red window, formed by the framed screen in its grooves, is the window proper of the building, and between the two is a gas-lamp, and an electric glow-lamp. The latter is actuated by a simple form of portable battery, and gives an effective and brilliant light.

Referring now to Fig. 3, which represents the interior arrangements of the dark-room on its



northern side, the window, W, is seen occupying nearly the centre of the wall. It measures more than 2 ft. in length, by 20 in. in height, so that, even with its darkest-coloured screen, it throws much light into the room. Mr. Dresser is one of those who do not care for groping about in a room which is all but entirely dark. He knows, well enough, that it is quality and not quantity of non-actinic light which ought to receive first attention. Provided that the first is right, we need not be particular as to the amount of it. On the right of the window is a rack, P, for dishes. Just below, and at a convenient height, are the sinks, O O, supported on brick piers. Slate slabs, S S, supported in the same way, act as tables for various manipu-

than the surrounding water, sinks to the bottom of the trough, where, in due time, it is drawn off. This is by far the best way of washing a gelatine film, and I believe that about half an hour of this soaking in an inverted position is quite enough to free it of hypo. The shape of the trough allows it to hold any sized negatives up to 10 in. by 8 in. indiscriminately, so that several of different sizes can be soaking at the same time.

One more feature shown in Fig. 3 remains to be noticed, and that is the arrangement on the left-hand side marked H. And this brings me to a consideration of that portion of Mr. Dresser's work to which he has devoted special attention, and in which he has succeeded to his heart's

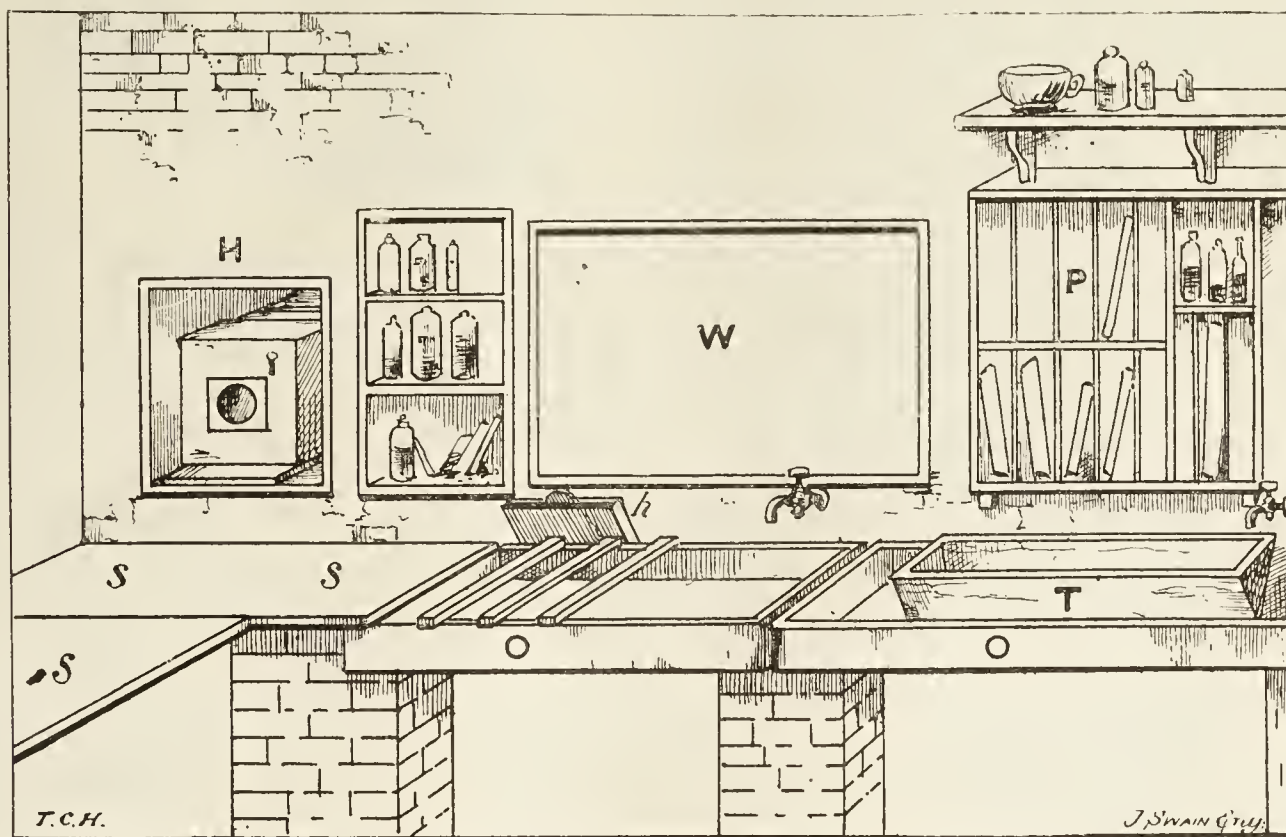


Fig. 3.—The Dark-room and its fittings.

lations. Across the left-hand sink is laid a wooden grid—as a rest for plates under development—and immediately behind it is a dipping-bath, *h*, for the fixing solution.

In the other sink stands a trough marked T. This is worthy of a little explanation, for it exhibits a plan for effectually washing negatives, which many will be glad to adopt. The trough is V-shaped, and is made of oak. It is a little more than eight inches wide at the top, sloping to about two inches in width at the bottom. It has a tap to fill it with water, and an outlet tap below. After a negative has been fixed and rinsed, it is placed horizontally, *film side downwards*, in this trough. The hypo-salt with which the film is charged, and which must be got rid of, being of greater density

desire. I refer to making enlargements from small negatives. Referring once more to the ground-plan of the dark-room, Fig. 1, we see an aperture, which is about 15 inches square, cut in the wall, outside which is a mirror, marked *m*. The outside arrangement is better indicated in Fig. 4. This mirror is hinged at an angle of 45°, and reflects the light from the sky into the room. Just within the aperture is a frame with carriers—not shown in the figure—in which a negative of any of the standard sizes can be readily inserted, the film-side turned inwards. The thickness of the wall allows room for a whole-plate camera fitted with a half-plate lens. Here, then, is the means of casting the image of a negative, magic-lantern fashion, upon any screen placed for its reception,



and it is obvious that the distance of this screen from the lens determines the size of the image obtained. The complete arrangement is shown at Fig. 5.

Here, on the right-hand side, we see once more the aperture in the wall, with its contained camera. The dotted lines indicate the path of the rays of light from the lens, which are received upon the movable screen. This last can be readily shifted to any portion of the slate slab upon which it rests. Mr. Dresser employs the apparatus wholly for enlargements on paper; but, of course, it would answer quite as well for making enlarged negatives from small positive transparencies. Mr. Dresser writes thus:—"As an example, let us suppose that it is required to enlarge a  $\frac{1}{4}$ -plate to one 10 in. by 12 in., with a Dalmeyer rapid-rectilinear lens, 1-1 size, on Eastman bromide paper. The necessary exposure will be from one to two minutes, according to the brightness or dulness of the daylight. With 'Alpha' paper the exposure would be from two to four minutes." It is hardly necessary to say that in practice the image of the negative is, in the first case, received upon a sheet of blank, white paper. By moving the screen, and the position of the lens with regard to its distance from the negative, the size of picture determined upon is soon found, and a correct focus obtained, the

Those who have had the advantage of studying Mr. Dresser's paper, which he lately read before the Camera Club, will remember that he uses three different systems of enlargement. The first

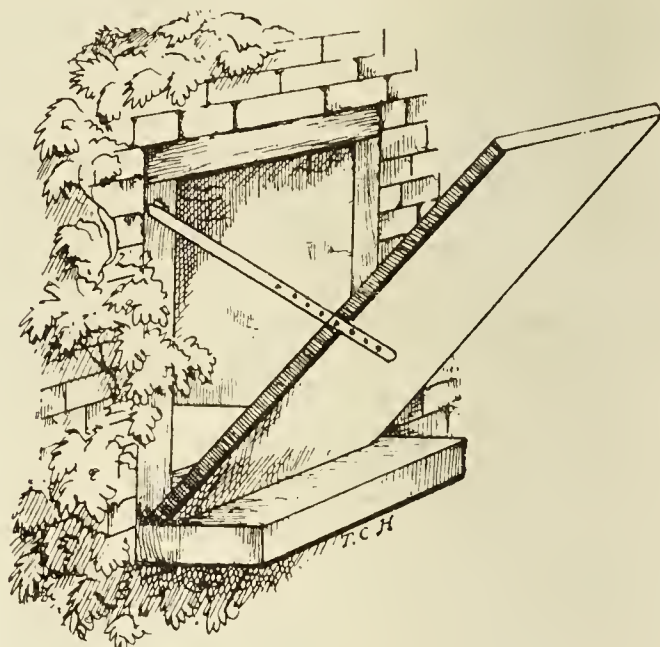


Fig. 4.—Mirror Outside of Aperture in Wall of Dark-room.

is by lamp, or electric light in a lantern; the second is the system just detailed; and the third is by employing the camera to secure the enlarged

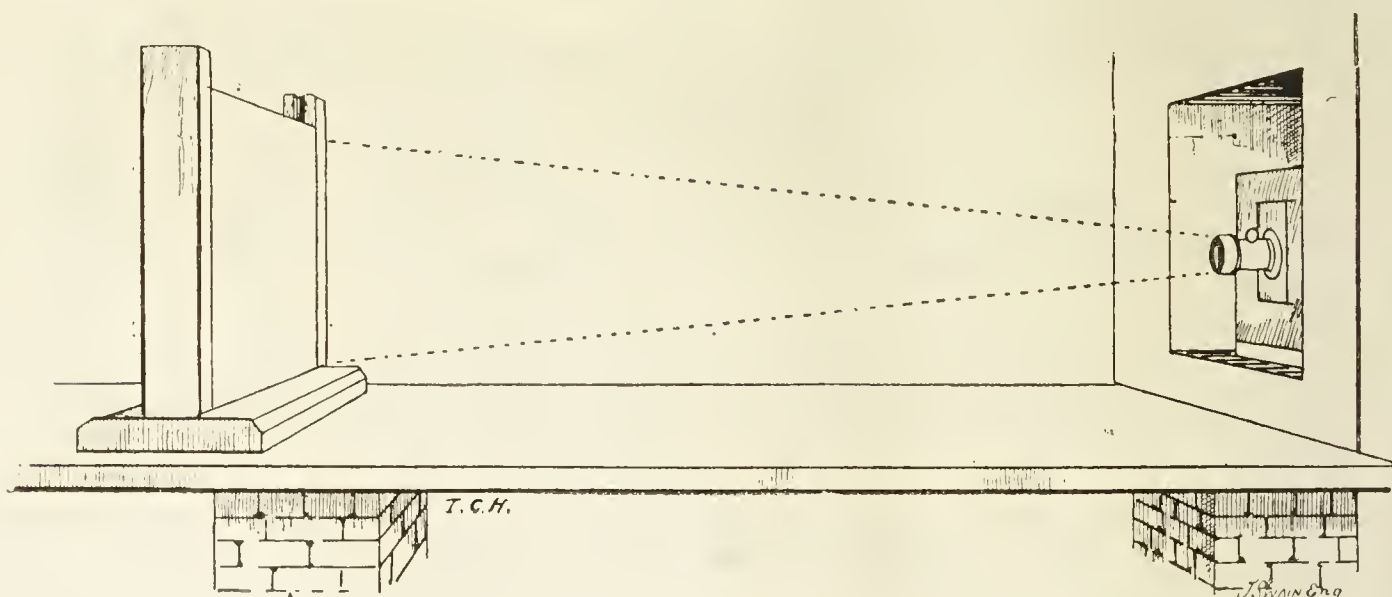


Fig. 5.—Dark-room Enlarging Apparatus.

finishing touches being given with the rack attachment to the lens. Light is then shut out by capping the lens. A sheet of sensitive bromide-paper is substituted for the blank sheet employed for focussing, and the necessary exposure is given. The advantage of having a water supply and chemicals ready to hand in the same room cannot be over-estimated. I noticed that Mr. Dresser's bottles were labelled by painting white letters upon a dark ground; their titles were, therefore, easily read in the dull light of the dark-room.

copy of a negative placed against a window. To this latter mode the reader's attention is now directed, and Fig. 6 demonstrates the simple manner in which it can be accomplished.

This piece of apparatus is a permanent fixture in Mr. Dresser's studio, and it is set up against the glazed wall or window, indicated in the sketch by the letter W. This glass is covered with a sheet of white tissue-paper, which diffuses an equal light over the negative placed near it, and shuts out the image of shrubs and trees planted outside. The



sketch almost explains itself, but it will be as well if I say a few words about details. On a raised table, about 5 ft. long, are fixed two laths or rails, upon which slides a block of wood, cut with grooves to loosely fit the rails. Upon this block is fixed an old 12 in. by 10 in. camera, with a focal length of 24 in., and an extending front, which affords a further length of 12 in., making 36 in. in all. This Mr. Dresser finds to be sufficiently long to enlarge a  $\frac{1}{4}$ -plate up to 12 in. by 10 in., provided that a lens be employed which covers 8 in. by 10 in., with a 7-in. or 8-in. focus. But

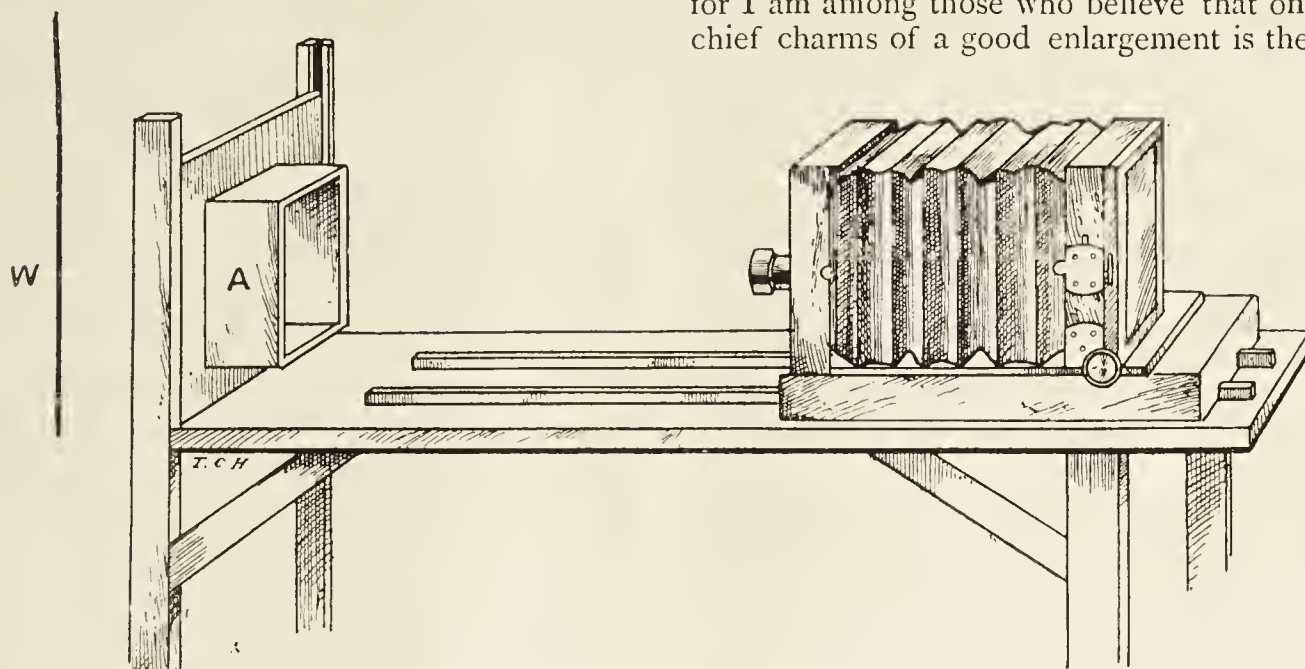
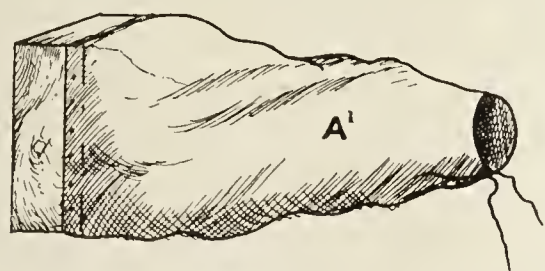


Fig. 6.—Enlarging in a Camera.

with an 11-in. focus lens, covering only a whole plate, it is only possible to enlarge up to 10 in. by 8 in. Mr. Dresser uses with this camera changeable fronts, so that any lens desired can be quickly adjusted. These fronts are square (see Fig. 7), and readily button in to the front of the camera in a recess provided for the purpose. The same arrangement holds good with the camera used for enlarging in the dark-room, which has been already described.

Referring again to Fig. 6, it will be understood that the square opening, A, is the position where the negative to be enlarged from is placed. It is backed by a frame with different-sized carriers for different negatives, and it will be noticed that it slides in vertical grooves, so that its height can be adjusted to a position central with the lens. Over

the box-like opening, A, another slightly larger box, furnished with a velvet sleeve, A¹, is placed when an enlargement is about to be made. This shuts out all extraneous rays, and the only light which can reach the sensitive surface in the camera must come through the negative. The whole arrangement is complete and efficient for the purpose in view, and the necessary exposure is about the same as in the other (dark-room) method. Mr. Dresser considers that this last method of obtaining an enlargement is preferable to any other. He points out that the work can be accomplished in an ordinary room, in which case it would, of course, be better to arrange the apparatus shown in Fig. 6 as a movable piece of furniture which could readily be carried to a room possessing, for the time being, the best light. In his hands the method affords a sharper image in the enlargement than any other. This I myself do not look upon as a point of first importance, for I am among those who believe that one of the chief charms of a good enlargement is the soften-

ing of the crisp and sharp lines in the original from which it is taken. But it is now time to wish my worthy host good-bye, and, as I once

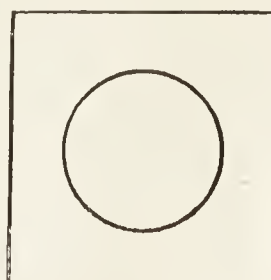


Fig. 7.—Changeable Front for Camera.

more travel homewards, I study my rough notes in pen and pencil, and look forward to the pleasure of weaving them into an article for THE CAMERA.



## PREPARING NEGATIVES FOR PRINTING.

BY WILLIAM BROOKS.



HERE are very few negatives taken, either landscape or portrait, that may be considered absolutely perfect. During my long experience in photography, I have always done my best to make it represent nature as truthfully as possible. I am fully aware of certain drawbacks as regards the rendering of colour in true gradation of tone, and I hope in this article to point out how to remedy that shortcoming as much as possible by what I consider legitimate means. Re-touching, as practised, I have no faith in, and, in my opinion, it is carried to such an extent as to make things as much unlike nature as possible; such a system is degrading to art. I think the chief thing to aim at is to make a photograph represent nature truly, without any elaborate work on the face of the negative.

Of the different dodges and little tricks, if they may be so called, to which I shall allude, some of them have been published at various times, and some have not. Sometimes, after a negative has been cleared by alum and citric acid, and washed, it may not appear quite intense enough; and if a little too thin, it is far better to strengthen it before it is allowed to dry, for, after gelatine has been in contact with alum and allowed to dry, on wetting again it does not appear to be in the same condition.

I consider that many negatives, by both amateurs and professionals, are very much too thin to give brilliancy and tone, with softness combined. The best way to judge the quality of a negative is to hold it up and examine it by transmitted light—to the northern sky, if possible, where we can always obtain a soft, regular, and diffused light; the *extreme* high lights in a negative ought only to be the most opaque parts, and those only small, which in the print show themselves like diamonds in a rich setting. The deepest shadows in the negative ought not to be more than fine lines of bare glass, with the proper amount of gradation intervening between the highest lights and the deepest shades; should the negative appear thin, with the highest lights somewhat transparent, it requires to be intensified, or the resulting print will be flat. I have tried nearly all the methods of intensification that have been put forward, but I find nothing better than a system that I brought out some three or four years since, and that is “silver intensification.” To ensure success, all traces of hyposulphite of soda must be eliminated from the film (or stains of the worst character will be the result). The best way

to accomplish this is by the use of alum and citric acid. I am aware that these pages will be read by many who have not had very long experience in photography, and, therefore, I trust I may be excused by the more experienced in the art for going so much into detail. To make the alum and citric acid stock solution, I prefer making a saturated solution of common alum, allowing some few hours for it to saturate, and to each ten ounces of solution I add one ounce of citric acid. This I keep as a stock solution, and dilute as required for use. In a clean dish, I make a bath as follows:—

Stock alum and citric solution 1 ounce  
Water ..... 8 to ten ounces.

Place the plate in this, and allow it to remain for not less than five or ten minutes. This will destroy all the hyposulphite that remains in the film. While the plate is in this solution, take a clean glass developing measure, and place in it about two drachms of the stock alum and citric solution (this will be sufficient for a plate 9 in. by 7 in.). Into this put about four or five grains of pyrogalllic acid, and add four or five drops of a solution of—

Nitrate of silver ..... 20 grains  
Distilled water ..... 1 ounce.

This solution is best used in a dropping bottle. The most simple form is a two-ounce bottle, with a good, tight-fitting cork, with a V-shaped groove cut in one side.

Take the plate out of the solution on a pneumatic holder, and, without washing, pour the solution from the developing measure over it, pouring on and off into the measure; in about half a minute the image will begin to acquire density. The best way to examine the plate now is to place on the bench or table a plate of opal glass, about 12 in. by 10 in., holding the plate at an angle of 45 deg., when its progress can be readily seen (this intensification can be done in the daylight). As the pyrogalllic solution changes colour it will stain the film throughout; this can be removed afterwards. Carry the intensification just short of what is required in the finished negative, for, after drying, the negative is a little more intense than when wet. When sufficiently intense, well wash under the tap and place in the hyposulphite fixing-bath again for about three minutes; this will remove the yellow stains before mentioned, but should any yellow or brown stains remain, the hyposulphite has not been destroyed before intensification; but, if these instructions be followed out, there will not be much fear of these stains occurring. The plate is again well washed under the tap and allowed to soak for a short time; it can then be again placed in a dilute solution of alum and citric for about five minutes, wash again, soaking for several hours; on examining the plate



against the northern sky the increased intensity will be found to be an improvement. I have built up an image in this way that otherwise would have been perfectly useless, and have obtained the best possible result. Some prefer to intensify with mercury, which is a system that I very seldom use; if mercury intensification be employed, the success greatly depends upon getting rid of the hypo; with mercurial intensification one is never certain as to how dense the image will be when finished. That is one reason why I do not recommend it.

Sometimes it will be found that after a negative has been fixed and washed, it is too intense. This time we shall have to proceed differently. If the image be of a green-brownish colour, the best thing to do will be to try and alter the colour of the image, bringing it to more of a neutral tint. The most simple way is to first immerse it in the concentrated stock solution of alum and citric, not diluted this time. Allow it to remain for not less than a quarter of an hour, and perhaps it will be found to have changed colour considerably. If not, other means must be resorted to. Make a bath of—

Sulphuric acid .....	1 ounce
Water.....	20 ounces.

This also is to be put in a dish, and can be used over and over again. It will remove almost any colour, and leave the image of a greyish tone. The negative can then be washed and dried as usual. If the image is of a yellow or greenish-brown tint, it will stop the action of the actinic rays; whereas an image of a greyish colour allows the rays to pass when printing. With a fogged plate, whether it be over or under exposed, very little can be done. At times, negatives may be too intense in parts. For this defect I have also a remedy, and a very safe one. Supposing, for example, we have a landscape negative with, perhaps, a building in it with a slated roof, and, when printed, this roof comes out a white patch, or the roadway prints a little too white; or, in a portrait, the light and shade on both sides of the face are not properly balanced, and one side prints too white. Take an old white cambric handkerchief, about two thicknesses on the forefinger of the right hand, and wet it with strong methylated spirit (the negative in this case must be perfectly dry), and proceed to rub the part that requires to be reduced—best in a circular direction. One need not fear rubbing too hard, so long as it is not hard enough to break the glass. The image will be gradually reduced, and, at the same time, if the handkerchief be examined, it will be found to be very black. Any part can be reduced as required. Care must be taken that no grit gets under the rubber, or it will cause scratches. For white lace dresses this system will be found invaluable.

When photographing interiors of churches, during development the windows get fogged up, through being over-exposed. Here, again, this system is a remedy for the evil. When development commences, the window starts out at once; if it be a stained window it comes out in all its detail, but all is fogged up and lost before the objects in the foreground are fully developed. I now never trouble myself about this blocking up, as it all can be removed by the use of methylated alcohol when dry, and the details come back in all their beauty; but care must be taken not to bring them back too much, but only just enough to obtain a proper effect. For bringing out detail in water with reflections it is very valuable, instead of leaving it as a white patch, and too great a contrast to its surroundings. Green fog, when on the surface of the film, can easily be removed by rubbing with spirit; and should it seem a little obstinate, I dissolve five grains of citric acid to the ounce of alcohol. This appears to remove it more readily. After finishing the rubbing, flow some fresh spirit on and off the plate to get rid of the acid. It is a very common practice to print from a gelatine negative without varnishing; and after a short time the negative becomes stained and spotted with silver from being in contact with the paper. For these stains I have also found a remedy. In each ounce of methylated alcohol I dissolve three grains of *pure* cyanide of potassium crystals, using it in the same way. I find it best to go all over the film, rubbing lightly, just bearing a little where the spots are, and they soon disappear. After all the spots or markings are removed, it is best to flood the plate, as before, with some fresh methylated spirit. I have very often improved a negative that was a little deficient in contrast, and looked somewhat flat. I place the negative in a frame, like a retouching desk, at an angle of 45 degrees, with a piece of white paper under, and, with a leather stump—such as sold by artists' colourmen—moistened with alcohol, I proceed to clean out (as I term it) the deepest shadows. To do this the rubbing requires to be rather vigorous. It will take some little time and patience, but it is surprising what effect can be gained by this means. Before printing, it is always best to protect the film from injury. The best way is first to coat it with plain collodion. It can be purchased of almost any photographic dealer in a large town. If not, it can easily be made:—

Pyroxyline (gun cotton) .....	6 grains
Ether (methylated), 720.....	$\frac{1}{2}$ ounce
Alcohol (methylated) .....	$\frac{1}{2}$ ounce.

It is best made up in a quantity of twenty ounces or more. After the cotton has dissolved, allow it to rest for a few days, and decant sufficient for use



into a smaller bottle; one drop of castor-oil may be added to each ounce. By use the collodion becomes thick, through evaporation; but by adding a little ether, matters will soon be put right. The solvents will evaporate in about an hour; the negative had then better be dried off before the fire; and if a valuable one, and a large quantity of prints are required from it, it is best to further protect it by a coat of varnish. Many think that collodion waterproofs the film, which is a mistake, for if a drop of water happens by accident to get on the film, it will soak through the collodion and make the gelatine swell up; but with a coat of lac varnish the film seems to be almost indestructible. I have placed a negative, after varnishing, in water for a week without any apparent harm coming to it; in fact, it is almost an impossibility to remove the film with boiling water. There are many varnishes in the market. Some recommend white hard spirit varnish thinned down; this varnish is of a soft and powdery nature. I find nothing better than the varnish I here give, which I have used for the past twenty-five years.

Best orange shellac .....	2½ ounces
Gum sandarac .....	½ ounce
Alcohol (methylated) .....	20 to 25 ounces.

Place in a much larger bottle, shaking at intervals, for a few days, and keep in a warm place; when all dissolved, it can either be filtered through filtering-paper or allowed to subside, pouring off into a clean bottle for use, adding one drop of castor-oil to each ounce. If found too thick, it can be thinned by adding more spirit. This is a varnish that I have never known to stick to the paper, even in the sun; it never becomes tacky. The plate is warmed in the usual way before a clear fire, the varnish flowed over it and poured off at one corner, and dried off before the fire, avoiding dust. The negative will be ready for printing in about half an hour, but it is better if varnished over night, for by the morning it becomes thoroughly hard.

Very often in a finished negative it will be found that the sky prints through a little too much, and gives a dirty appearance to the print. The most simple way to get over this is to gum a piece of tracing-paper on the back of the negative; when dry, place it in a frame, as before stated, and give a slight wash of gamboge over the sky part, going carefully round the outline (this is done on the tracing-paper) and any other little bits that might look better if brought out. If there is any part that prints a little too white, the paper that covers it may be cut out with a penknife and removed, which will allow the light to pass through. Some paint out the sky of a negative on the film-side with black varnish, going round the outline with Indian ink. This is a method which must be condemned, on account of the outline printing with such a

sharp cutting line; it is best done on the back of the negative. It adds to the beauty of a photograph to print in a sky from a separate negative, a plain sky now is not tolerated, being, as it were, so much space to let. The only work that ought to be done on the face of a negative is stopping out any little spots that may have been caused by dust. The black varnish that I prefer is made by Hopkins & Williams, of London, and sold under the name of Liquid Jet. It is fine asphaltum dissolved in benzole; and can be made a little more dense, if required, by adding a small quantity of vegetable black to it. If parts of the negative be a little too clear and transparent, dabbing on a little moist water colour, sold in tubes, over the back of it on the glass side—Indian red, light red, umber, or any non-actinic pigment—will cure the evil.

About twelve years since I introduced a system of masking the negative, and read a paper on the subject before the South London Photographic Society, at the Society of Arts, John-street, Adelphi, London, with demonstrations. I first used it with the view of getting a more brilliant print from a thin negative, and also for getting a certain artistic effect. After a negative has been varnished and is found to be too thin, it can only be doctored up by backing with tracing-paper as above, or by the system that I am about to describe. From the negative I first print a very deep print on thin albumenised paper, printing it well in the shade. The print is toned slightly, keeping it red, and is then fixed. When dry, if it is a landscape subject, and has a sky, I pin the print, face upwards, on a board, placing it in a sloping position, the sky part to the bottom of the board. I then make a ten-grain solution, or stronger, of cyanide of potassium, and very carefully paint over all the sky part with a camel-hair pencil, going very carefully round the outline without touching it. Wherever the solution touches, the paper turns white. As soon as this has been done, wash rapidly under the tap, still keeping the picture bottom up. Allow to soak for about one hour. Blot off between blotting-paper, and allow to dry spontaneously. On no account must it be dried by heat. When thoroughly dry, we have a very dark print with an exceedingly white sky. When dry, place in a printing-frame, which must have a glass bed-plate to it. Place it face upwards, and place another piece of thin albumenised paper in contact with it. Expose to light, and print in the ordinary way, thus obtaining a paper negative. This requires to be printed according to the density of the original negative. If only a little more strength is required, it need not be printed very deeply. If otherwise, it must be printed more deeply. This paper negative must be toned and fixed like an ordinary print; but on no account must the image be toned blue, or it will



allow the light to pass through it. Dry in the same way as before. This time we have a negative with a very intense sky, which is used as a mask by placing it on the back of the original negative, making it fit as well as possible; it can be fastened with a little gum at the edges. On looking through the negative we shall find it apparently much more intense. If it is found to print a little too hard, the paper negative can either be oiled or waxed, or only such parts as may require it, according to the desired effect. The reason the sky in the paper positive was removed by the cyanide of potassium solution will be now apparent. Pictures printed from negatives treated in this way have a very pleasing effect, and have the appearance of being printed on china or porcelain. About the time I introduced this system of masking, a Russian photographer, by the name of Dennier, produced some prints having the same effect.

I must mention that any part of the negative can be independently masked. For instance, if a foreground is a little too weak, the whole of the image must be removed by cyanide solution, except the part that requires to be strengthened—viz., the foreground.

After a negative has been in use for a few weeks, sometimes a deep brown stain will occur, first at one corner, and then spreading sometimes half across the negative (this stain will be found to occur on the thick end or corner of the plate where the emulsion is thickest), through not being left long enough in the fixing-bath. A plate ought to be left in the fixing-bath five or ten minutes after the unaltered bromide of silver is apparently dissolved out. I have operated successfully on negatives of this kind, and succeeded in removing the stain; but it is very difficult, and one is not always certain of success. If the negative has been varnished and collodionised, both have to be removed. To remove the varnish, it has to be placed in a dish of methylated spirit, and allowed to soak. This will dissolve the gum. It then has to be washed in fresh spirit to get away the last of the varnish; after which the collodion has to be removed. This is done by rubbing it with a tuft of cotton-wool, well wetted with equal parts of ether and methylated alcohol—this must not be used sparingly, for all the pyroxyline must be removed—and afterwards well washed, and then placed in a strong solution of hyposulphite of soda, and allowed to remain until the stain is removed. It is not always successful, but it is at times. If successful, it is then well washed, and treated as an ordinary negative. Sometimes, especially in the summer, the gelatine film is apt to blister when washing after fixing. It should be put into strong methylated spirit, and allowed to remain for an hour or

so, and the film will contract and go down. It can then be dried and varnished.

Many, when they know there is a remedy for any shortcoming, get into a slovenly system of manipulation, thinking it can all be made right by dodging. My plan is to do everything to the best of my ability, and I would at all times prefer, if possible, to take another negative, and avoid any after-dodging; but a knowledge of such little dodges and tricks is most valuable.

THE last number of the *Philadelphia Photographer*, just received, maintains the high standard of excellence for which this journal has been famous for many years. As usual, a good silver print forms its frontispiece, and the text is full of matter which should be interesting to all photographers.

THE BLUE PROCESS.—There are few photographers who have not upon certain occasions longed for some method of quickly obtaining a proof positive from a negative, without all the trouble involved in suddenly undertaking the usual operations necessary to produce a silver print. Those who have taken up the Platinotype process have naturally less trouble, and save much time in getting a proof by that method; but still the matter is a serious undertaking, involving hot developer, two or three dishes, and several changes of water. All this trouble is avoided if the blue-printing process be employed for this purpose of taking hurried prints. This method has long been in use in engineers' and architects' offices for obtaining copies of plans, and the sensitive paper can be bought ready prepared. But, as all good workmen like to be as self-dependent as possible, here is the formula for its production:—

- |                                 |             |
|---------------------------------|-------------|
| I. Red Prussiate of Potash..... | 120 grains. |
| Water .....                     | 3 ounces.   |
| II. Ammonia Citrate of Iron ... | 140 grains. |
| Water .....                     | 3 ounces.   |

Each of these two solutions should be compounded separately in the first instance, and when the crystals have disappeared, mix I. and II. together. Any good plain paper may be used. It should be either floated on the solution in a dish, or the liquid can be applied to it with a sponge. In either case the paper must be hung up to dry in a dark room, after which, if ordinary precautions be adopted, it will keep well for several months. When required for use, it is cut to the size of the negative employed, and exposed under it in a printing-frame for five to ten minutes in bright sunshine. The print is developed by simply soaking the paper in plain cold water. It is then finished. The result is a brilliant blue picture upon a white ground.



# The Tourist.

## CAMERA NOTES IN NORWAY.—II.

BY T. HEATH JOYCE.



THE great difficulty that the photographer experiences in Norway is the selection of suitable subjects for his camera. The scenery is on so large a scale that at first he is almost afraid to attempt the feat of concentrating an extensive mountain prospect on a comparatively small plate. And yet, if the views are judiciously chosen, little difficulty need be feared.

Last year, the writer took a comprehensive photograph of the Borgund Valley, with the well-known wooden church in the middle distance and the pine-clad mountains on the horizon, on a  $7\frac{1}{2}$  by 5 plate; while the illustration on the opposite page, of Horgheim, in the Romsdal, is from a photograph I took on a 5 by 4 plate. The mountains shown are from three to four thousand feet high, and the negative, when enlarged by the lantern, makes a capital picture. Thus, it will be seen, there need be no fear of not being able to do good and efficient work with a really portable camera. Great attention, however, should be paid to what may be termed the packing of the apparatus. The case should be as dust-tight as possible; the hasps of the dark slides must be thoroughly secure, and the whole paraphernalia must fit tightly in the case. Otherwise the dark slides will quickly rub holes in each other through the constant jolting of the carriage, while the dust, which is of exceptional fineness, will penetrate to the very plates, and give the negatives the appearance of a starry sky in August. A piece of mackintosh, too, should always be taken, as the rain in the mountain districts is simply torrential. The light in Norway,

owing to the mountainous nature of the country, is particularly capricious. In the valleys the exposure required is considerable; while at sea a drop-shutter is scarcely sufficiently rapid, and it is for this reason that in my first article I recommended a proof to be printed before any noteworthy number of plates had been taken.

To turn to the routes which a tourist photographer should adopt in Norway, the first point for which he should make should be undoubtedly Bergen. As a rule, Norwegian towns possess no architectural features, but Bergen was so long under the sway of the Hanseatic League that its streets bear the impress of the Teutonic influence; while for those who care for figure-subjects, the fish-market, with the quaintly-shaped boats laden with

all species of fish, which strangely-costumed fishermen are ladling out to purchasers picturesquely attired in many-hued petticoats, affords a wealth of subjects not often obtained in this prosaic age. Then, again, there is that queer-looking old street, the Tydskebyggen, with gabled houses on one side, and on the other quays piled high with dry codfish, while beyond lies the harbour, filled with all kind of vessels, from the large English steamers



Fig. 1.—A Norwegian Jægt.

to that national craft of Norway, the "jægt," of which an illustration is given above (Fig. 1). The "jægt," which only carries one mast, with a large square sail, is constructed on much the same lines as the piratical ships of the old Vikings, which were wont to ravage English waters, and is the universal type of coasting-boat throughout Norway. To Bergen, as to Rome, lead all roads, and consequently no better headquarters can be selected for the tourist. Thence, in a few hours, may be taken trips up the Hardanger Fjord, where all kinds of scenery can be obtained, from the magnificent glaciers of the Folgefond to the genial, smiling valleys, where some of the most striking Norwegian costumes are to be seen. A wild route leads through Thelemarken to Chris-



tiania, full of mountain and forest pictures for the camera ; while, if the traveller has a taste for some of the gloomiest and yet grandest scenery in, or indeed out of, Europe, he will be amply gratified by the Nærodal and Nærofjord, which lead to the Sognefjord. There is a splendid photograph, by an Englishman, of the former, showing the narrow defile, with the huge towering mountains on either side, and the thread of a road winding down to the bottom in the far distance. The Nærofjord is scarcely less imposing, as the overhanging mountains, some 3,000 ft. high, seem almost to offer an impassable barrier to the noisy little steamer as she pants down the narrow channel.

From the Sognefjord, the snowfields and glaciers of the Jotunheim and the mountains of the Jotunfjeld can easily be reached. And here I may say that nowhere in Europe can the tourist photographer obtain such magnificent and extensive glacier views as in Norway. They are not mere show places, as in Switzerland, crowded with Cockney tourists and shoddy Americans bent on driving through Europe at so many miles an hour—but true relics of the Glacial age, magnificent in their grand solitude, and affording endless food

for the student of art, of science, and of nature. It would well repay any photographer to cross the mountains from Fortun (at the head of the Sognefjord) to Rødsheim. The journey is performed on foot or on ponies, and the road is rough, while not a living soul is to be met with for miles. But then the views of huge snowfields which here and there have to be crossed, of some of the largest Norwegian glaciers winding their way down to the valleys beneath, of the loftiest peaks in Norway, are simply superb ; while the glimpses during the ascent and descent of the sæters, or mountain cow-farms, where the cattle are tended in the summer by peasant girls, will give an endless variety of subject. From Rødsheim there is an easy road to the Dovre-

fjeld, where shots may be taken at the various mountain stations partially subsidised by the Government for the sake of travellers in the winter ; and, at Sneehatten, the snow-capped mountain, once considered the highest in Norway, but now ascertained to be topped by Galdhopiggen, of which last a capital view is obtained from the Jotunfjeld. Both on approaching and on leaving the Dovrefjeld picturesque ravines are passed, with mountain streams dashing along at headlong speed, and forming innumerable waterfalls, until they subside into more soberly-flowing rivers, which are utilised by the timber-cutters for floating their huge pine logs until the nearest fjord is reached, where the timber is taken in tow by a steam-tug, and transported to the saw-mills.

Driving northwards, we come to Throndhjem, the ancient Norwegian capital, where every photographer will feel bound to take a shot at the old cathedral built by English workmen many centuries since. Then there is no lack of material in the town ; there is a magnificent view over the harbour from an adjoining hill, and a grand waterfall (the Leros) close by in the neighbourhood. Most people, however, will hurry on board a tourist

steamer bound for the North Cape and the Midnight Sun. Throughout the coast journey the scenery is very fine, and just what a photographer could wish. Grim, strange-shapen rocks and islands, quaintly-built and still more quaintly-situated towns and villages, curious Lapp encampments, with herds of reindeer, craft of every kind and shape passing and re-passing, all cannot fail to satisfy the most rapacious appetite for change of subject, until finally the North Cape, that *ultima Thule* of Scandinavian tourists, is reached, and the Midnight Sun is fixed on the plate from the summit. Not, however, that there is any need to go so far north, as the sun during midsummer does not sink below the horizon for some distance south of the North Cape ; but still a



Fig. 2.—View from Horgheim, in the Romsdal Valley.



portrait of the Midnight Sun taken from the point that tradition—and in this case, as usual, tradition is wrong—fixes as the northernmost point of Europe, invests his solar majesty with an appropriately romantic halo.

Throughout this trip I would urge all to take the most rapid plates and the most speedy shutters, as some of the best subjects will present themselves while the steamer is at full speed, and perhaps rolling—not too much, but just enough to ruin any but a quickly-exposed plate. To return southwards, the tourist, on his way back to Bergen, should not neglect to stop at Molde, and take a trip down the Romsdal (he can drive thence by the Dovrefjeld to Christiania, if so minded), one of the finest valleys in Europe, and which affords some splendid mountain and waterfall effects. One of our illustrations (Fig. 2) shows a view from Horgheim, one of the Romsdal post-stations. In conclusion, I may say that a trip to Norway with the camera will prove one of the most picturesque, interesting, and economical holidays possible. The cost of driving is about fourpence a mile, horse, vehicle, and post-boy included, but there are many parts through which the tourist-photographer would rather travel on foot. For a bicyclist the main roads are admirably suited, but the constant recurrence of hills is somewhat fatiguing for a tricyclist. The living at the roadside stations is very cheap, even in frequented routes; while as to linguistic difficulties there need be no fear of the traveller not being understood. Of course, in the mountain by-paths a slight knowledge of Norwegian—such as can be got from Baedeker in a fortnight—is necessary, but on the main roads there are few stations where some one, at least, does not understand a few words of English. The best months for travel are June, July, and August. July is preferable for the photographer, as the light is better than during the whole year, and the advantage of this in the valleys cannot be overestimated.

## HOW TO AVOID SNARES AND PITFALLS IN PHOTOGRAPHY.—II.

BY DR. G. LINDSAY JOHNSON.



HAVING procured a camera and tripod, we must now turn our attention to the rest of the apparatus. First, as to the carriers for plates. As collodion photography, albeit the most delicate and beautiful of all processes, is completely driven out of the field by the more convenient and easy gelatine plate, we shall only consider dry plates and films. I think four double-backs form the most convenient

number to carry, although on several occasions I have taken eight or more. Six slides (three double-backs) hold hardly sufficient charges for a good day's sport, and five double-backs form too bulky a package. For any camera under a whole plate a changing-box is very convenient, but I think most tourists will agree that it becomes less useful as the size is increased. I should place the *whole* plate as the size at which the line should be drawn. For plates over 10 by 8 I think a changing bag or umbrella tent is preferable to anything if more than three double-backs be taken, and it will be found convenient to have the double-backs to open sideways, instead of at one end, as is usually the case, otherwise they take up so much room when they are opened in the bag. I much prefer that form of back which opens in the usual way to the solid back which is greatly in vogue in America. In the latter case, instead of opening the back to insert the plate, the slide is drawn out, and two little brass clips hold the plate in its place at one end, after the opposite corners of the glass have been slipped beneath two rigid wires. It looks most simple, but in practice I have found the brass clips slip, and the plate in consequence to be thrown out of focus, or else locked in the attempt to close the slide. I once spoilt a number of plates in this way, and, much to my disgust, had to throw them on the side of the road for the benefit of the astonished yokels, who stood open-mouthed at my reckless behaviour.

If you use carriers, be sure and see that the grooves in them correspond with the two screws of the slide (which, by projecting on its under surface, prevent it from being drawn quite out of the double-back). A first-rate maker once made me half-a-dozen carriers in a hurry, and I suppose his workmen forgot this point; anyhow, it was a long time before I discovered the reason why the slides stuck so tight while attempting to draw them out. The back would shut well enough, and, when empty, would open perfectly easily; but directly I charged it and proceeded to expose, I had to lever it out with a penknife or key. On cutting fresh grooves in the carriers, all difficulty ceased, as the slides were perfectly made. It is very necessary to have the backs clearly numbered, as in a dark building, or when growing dusk, I have found considerable difficulty in distinguishing them. A piece of ivory let in the back, with the number in bold black or red figures, is perhaps the best. And now let me point out three great stumbling-blocks which beset every beginner's path, and which are responsible for more failures than perhaps everything else put together. I refer to *Light*, *Dust*, and *Damp*. Let us treat of them each in turn.

**LIGHT.**—Out of every dozen negatives that one meets with, ten, if not eleven, show traces of fog,



for which the maker of the plate should be considered in no way responsible. Only lately a friend persuaded me to pass judgment on a box of his negatives, and I was heartily sorry to have to point out to him that there was not one among them that was absolutely free from fog. He could not realise this; but I asked him if he could explain, on any other grounds, why that part of the plate which lies behind the rebate should not be clear, transparent glass? That was conclusive. It is worth while to remember that, if the margin of the negative covered by the rebate is everywhere clear and transparent after fixing, no light which has not come through the lens can possibly have reached the negative unless it be through a pin-hole in the bellows or front of the camera. This may appear superfluous information, yet I constantly meet with amateurs of one or two years of photographic life who appear to be ignorant of it. Not until the negative is completely fixed in the hypo is all danger from light at an end. Photography seems to me much to resemble a steeplechase, in which there are ditches, hedges, and gates to be jumped, and, should the unfortunate rider stumble at any one of them, the whole race is entirely lost, or a bad third at best is secured. So in photography we have snares and pitfalls at every stage, and a slip at any one of them impairs the final result.

As this paper is not intended for those who know enough of photography to make their own films, let us pass over the dangers up to the time the plate is prepared for the slide. By this time the reader is probably aware of the superiority of paper films over glass in preventing halation when photographing high lights in conjunction with deep shadows—*e.g.*, a window in a church. In such a case the window, instead of being a brightly-illuminated square in sharp contrast to the surrounding wall, is encircled by a hazy-flare margin of variable breadth. This can be largely prevented by the simple expedient of painting over the tin partition on both sides of the double-back with an intense dead-black. Nothing else need be painted, unless you are using a carrier, in which case that also must receive a coat on the side which faces the lens. The greater number of slides which I have examined are, to my mind, very defective in this respect. You might arrange your toilet most satisfactorily by the light reflected from some of these tin partitions in spite of their blacked surfaces. Many a brilliant negative has been reduced to a "moderate success" by neglecting this precaution. I have made experiments with various black pigments, but have discovered only three formulæ which are really good. Soot is the basis of all the best dead black pigments. Of these the chief are, first, lampblack, prepared by collecting the products of

imperfect combustion of a tallow dip or naphtha wick, such as may be obtained by holding a plate over a smoky candle. 2. Gas-black, which is formed in large quantities on the under surface of the iron plates from the gas-jets used in preparing veneer. (This is not obtainable at the ordinary colour or Italian warehouses: the only place that I know of where it can be obtained is at 43A, Drummond-street, a few doors from Euston Station, where it is retailed in tin boxes, at 1s. 3d. a quart.) It produces a very intense black, free from grease. 3. Vegetable black, obtained from vine-twigs. This is very good, but needs well grinding before using, as it is rather gritty. There are three good ways of preparing the colour, all of which I have tried. The first I prefer for brasswork, and the second and third for wood and canvas. 1. Into an empty tin can (a Swiss milk tin does capitally) put about four tablespoonfuls of the black, by degrees add a little cold water, and stir for some minutes, until you get the whole into homogeneous black mud. Now place the tin over a gas-burner, and add about an equal quantity of clear size, stirring all the time until it begins to boil. Remove from the fire, and go over the surface with a good-sized paint-brush. When dry, put a second coat on. (N.B.—Be careful to avoid dust when painting and drying, as it causes innumerable bright specks on the matt surface.) 2. Into a mortar put a handful of gas-black, adding spirits of wine by degrees, stirring with the pestle all the while, until you have a uniform thick fluid of the consistency of ink. Add more spirits from time to time to make up for evaporation, and paint on several coats. 3. Take, say, an ounce of size. Melt it over the fire, put a cupful of gas-black into a mortar, break up any lumps which it may contain, then pour it into the melted size (stirring all the time) until it gets quite thick. Then remove from the fire, and add turpentine by degrees until you have made it of the consistency of cream. Paint over the surface as before. At first it will appear very shiny, but it soon dries a most intense dead black. The reason for using size is twofold. First, to prevent the black rubbing off; and secondly, to prevent the paint from sinking too much into the wood. Hence little or no size is used in brass-work, and more is used for deal than for mahogany.

I have treated this subject somewhat lengthily, as it is useful to know how to remove the objectionable shiny surface.

CAMERA.—As light may get into the best of cameras, it is best to construct the focussing-cloth so as to protect the vital parts. These are the front (including flange and slit of lens) and the slide and rebates behind. These should, therefore, be covered when exposing. My cloth is made of two thicknesses of indigo-coloured sateen,



quite light-proof. It is shaped thus (Fig. 1): One piece, A, is folded along the dotted lines,  $aa'$ ,  $bb'$ , so as to form two wings, C C, which cover the sides of the camera, and project far enough behind to allow for focussing when the bellows are drawn out to their full length. The other piece, B, is sewn along the top and front ends of the wings, C, C, thus forming a kind of floorless

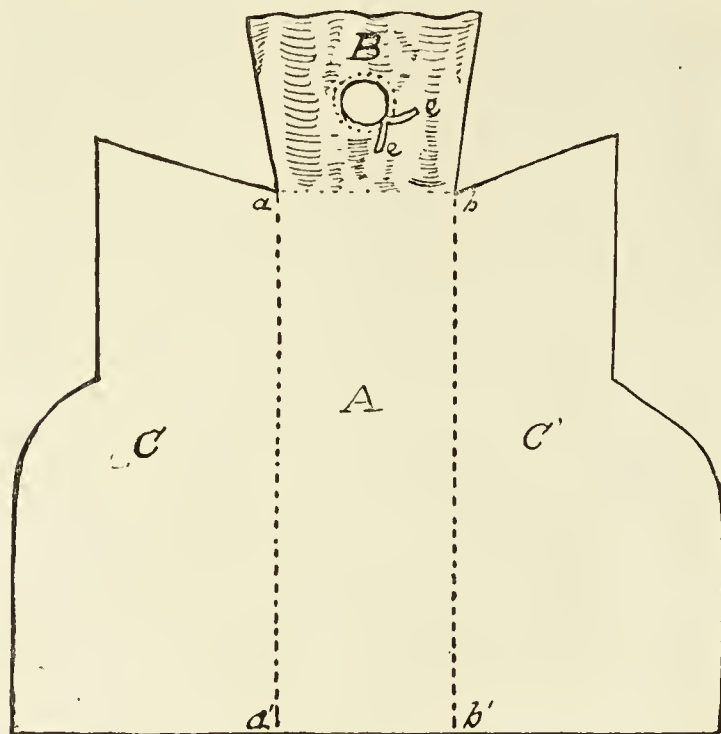


Fig. 1.

box when on the camera. In the middle of B a circular hole is cut somewhat larger than the hood of the lens. It is sewn round with elastic,  $ee'$ . Of course, the front is made a little larger than the width,  $ab$ , to allow for stretching the aperture. After focussing, the required stop is inserted into the lens behind the cloth, so that only the nose of the lens peeps out, while the wings fully protect the slide when drawing it out for exposure. The next point to consider is how to protect the plate from its enemies from the time of removal from the box to its return after exposure.

(To be continued.)

## OUR COLOURED ILLUSTRATION.



OUR full-page picture this month, a view on the Riviera, shows what can be done with a new process which has been elaborated and introduced by the London Stereoscopic and Photographic Company, the subject being a reproduction of one of the prize pictures hung at their recent exhibition in Bond-street. The process is well adapted for book illustration, for it combines the advantages of a chromo-lithograph with the undoubted correctness of a photograph.

We may note that the tint or tints employed can be varied with the nature of the subject. This method of printing is likely to supersede to a great extent other processes by which book illustrations and other pictures have been hitherto produced.

## SOME HINTS ABOUT VARNISHING.

BY THE EDITOR.

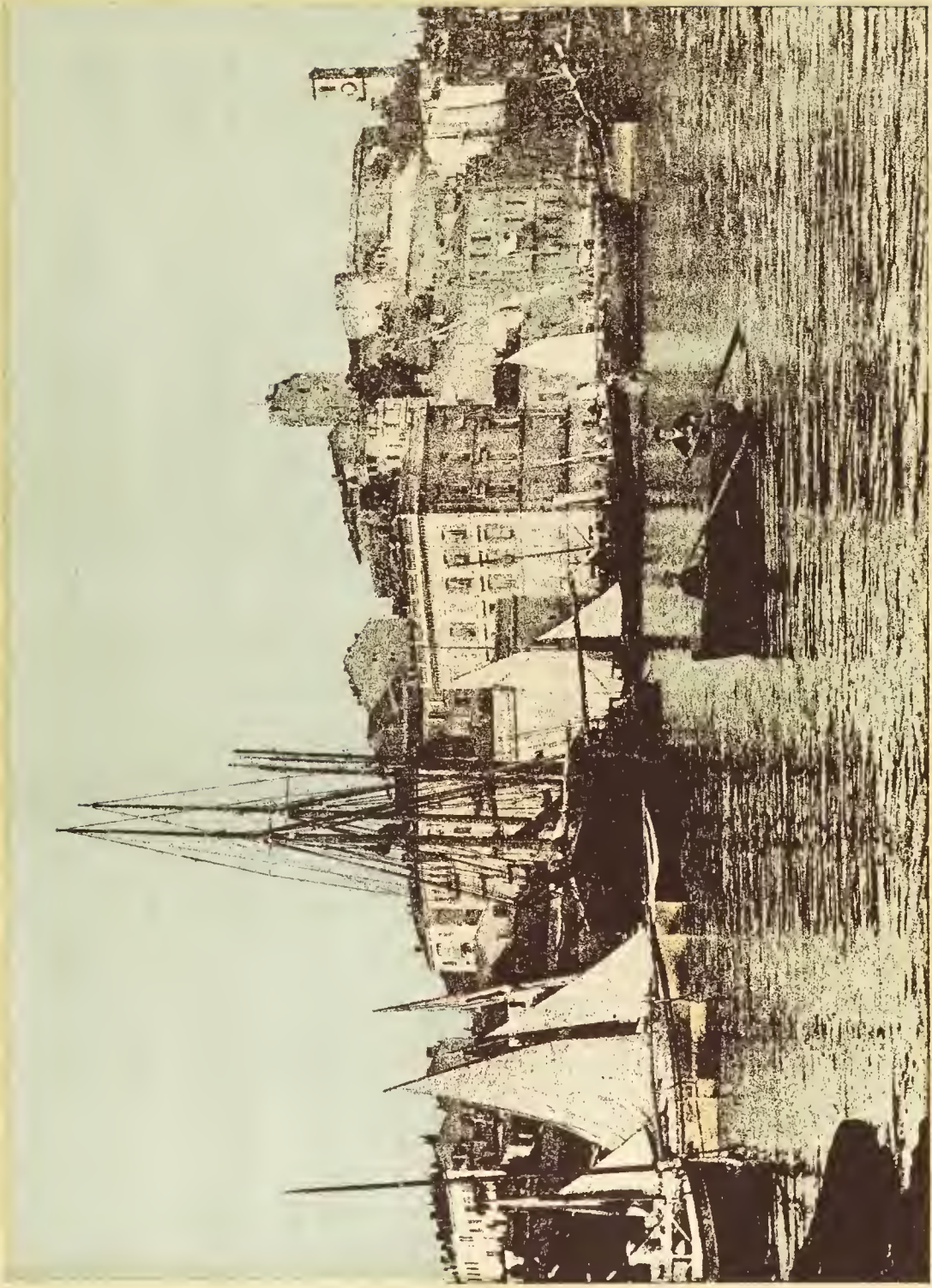


DURING the past few years I have had the opportunity of examining many hundreds of gelatine negatives, which have been taken by as many different workers. I have been much surprised at noticing that the great majority of these plates, which were in most cases regarded as being "things of beauty and joys for ever," were not varnished. There they were with their delicate and fragile skin of gelatine, which the accidental touch of a finger-nail might easily scratch, and a few drops of moisture would inevitably ruin. "Things of beauty" many of these were; but "joys for ever" they had little chance of being, owing to the carelessness and neglect which denied their poor naked bodies the slightest covering as a protection against our very treacherous climate.

There is no doubt whatever that a coating of varnish affords much protection to a gelatine film. In looking the other day through a box of negatives taken on my own plates more than twelve years ago (I am a little proud of being one of the early workers with these plates), I noticed that those which had been varnished were as free from blemish as if they had been taken yesterday, while those which had not been so treated were covered with spots, and were, therefore, quite useless. In one case the protective value of varnish was most clearly indicated. The picture was a transparency on a gelatine plate, and its subject was a map of southern Europe. I had—in order, I suppose, to try an experiment in lantern-slide colouring—painted in the Mediterranean Sea blue (varnish colour). This part of the plate was thoroughly preserved; the rest had almost perished, so far as detail was concerned. Perhaps if the plates had been coddled up, as delicate children are, and kept free from damp and rapid changes of temperature, they would have preserved their good looks in spite of want of varnish. But few workers can find a place of storage fulfilling these conditions. They should, therefore, varnish all negatives to which they attach any value, leaving alone only those which are recognised failures, or which have been taken simply to fulfil some passing need.

If any worker is asked why he does not varnish his negatives, he will probably reply as follows:—





*Photo-Crayon.*

*London Stereoscopic & Photographic Co., Limited.*

ON THE RIVIERA.







"I don't see the use of it. So-and-so never does, and *he* takes splendid pictures." Or, perhaps, he will reply—"Oh, varnishing is such a nuisance. I can never get this stuff to flow over the plates, except in ridges—and I can never prevent it running over my fingers. Then, when it is on my fingers, I can never get it off," and so on, and so on. Many amateur workers—and good workers too—have admitted to me that they cannot for the life of them varnish a plate properly, and have proved their words by showing me the lamentable results of their attempts. These have failed generally for the same reason that many other human attempts fail, *i.e.*, from want of attention to little details. In nine cases out of ten the varnish as sold is too thick for the purpose. It should be diluted with methylated spirit. A capital varnish for negatives, and one which I have used for many years, is made thus:—Buy at a reliable dealer's—a varnish-maker by preference—half a pint of the best "hard, white varnish." Put it in an ordinary wine-bottle, and fill up to the neck with methylated spirit; give it a good shaking; allow it to settle down for a few days, and it is ready for use. The ordinary and best method of varnishing a negative I will now describe in detail. The work should be done before an open fire, or, what is better, in front of one of those asbestos gas-stoves which have lately been introduced to imitate an open fire. An india-rubber pneumatic holder is indispensable. Place the plate to be varnished on this holder, and move it in front of the fire until it is uniformly warm—not *hot*. Now brush it across with a flat camel-hair brush, to remove any dust which may be present on its surface, and proceed to varnish. Still holding the plate on the pneumatic ball, bring it to the horizontal position, and pour upon its centre a pool of varnish. Do not hurry the matter at this stage, but do all deliberately. Gently incline the plate, so that the round pond of varnish creeps from corner to corner, and, when the last corner is covered, incline it still more, so that the surplus varnish will run off. But this surplus will carry with it, in spite of all care, a certain quantity of dust. So do not let it contaminate your stock of varnish, but let it run into a dry bottle kept for the purpose. When this second bottle is full, its contents can once more be filtered into the original vessel.

As the varnish drains from the last corner, gently rock the plate from side to side; this movement will effectually prevent ridges and lines. And before the plate is thoroughly drained, remove it and hold it before the fire, still keeping up the rocking motion. This time the plate may be made quite hot before it is withdrawn, after which it may be placed in a rack to cool. The work is simple enough, and those who fail in it do

so, I believe, through want of care, or in some cases from natural want of steadiness in the hands. The fact remains that many do fail.

In order to render the art of varnishing much simpler, I have lately tried a few experiments, and the outcome is so satisfactory, that I offer it to my readers, and I think that they will accept it as a boon. I do not say that the new method I am about to describe is so good in its results as the old-fashioned process just detailed, but it is much less tedious. So quick, indeed, is it, that I have just varnished two dozen 7 by 5 negatives in less than ten minutes. This is the way I went to work.

In front of a good clear fire, my twenty-four negatives stood in a rack, and had been standing there long enough to get comfortably warmed. On a table at my elbow was a saucer, which I half filled with varnish. I had also provided myself with a bit of the finest sponge, about the size of a very large walnut. I took up the first negative, attached it firmly to the pneumatic holder, and held it ready in my left hand. I now took up the sponge with the right hand, squeezed it once or twice in the varnish, so as to take up a moderate quantity of the sticky fluid, and varnished the plate. This I did by rapidly stroking it with the sponge, from left to right in about six strokes, until it was covered from top to bottom. No portion must be gone over twice, and the strokes must be rapid, and applied with some little pressure. If the varnish is right and the plate is at the proper temperature, neither too cold nor too hot, it dries instantly. The plate is then returned to its groove in the rack, and the next one is taken in hand. By this method a large stock of plates, the produce of several weeks' touring, can be varnished without trouble or difficulty; and I think that in describing it I am doing some service to those who have not succeeded with the more ordinary process. As I have already intimated, the results given are not so good as they might be, and by this I mean that the varnish does not lie on the negative as a glassy film, but as one which shows the lines made by the sponge. These lines make no difference with regard to printing qualities, and are not half so marked as when a brush is used.

There is one other mode of varnishing which I have tried, which is of the simplest description. Heat is not employed at any stage of the process. It is to use the white, hard varnish as sold (*i.e.*, without dilution with spirit). It is nearly as thick as treacle is in summer. A flat camel-hair brush is dipped into the varnish, and is applied to the negative with firm, equal strokes. The varnish must be used sparingly, or it will show ridges, and when the negative has been operated upon it must be laid, in a horizontal position, in a place quite free from dust; for it takes some hours to dry thoroughly hard.



I may summarise the matter thus :—

1. The older but more difficult plan of warming the negative and pouring thin varnish upon it is by far the best, if it be properly done.

2. The sponge method is quicker, and undoubtedly forms a good deal of protection to the film. It is a good makeshift.

3. The cold method, with thick varnish, is quick and easy, and forms, as far as I can see, a thorough protection to the film.

In any case, if the varnishing is not satisfactory, it can be readily removed by heating the negative, soaking it in methylated spirit, and rubbing off the resinous coating with a tuft of cotton-wool.

With a hint as to the most convenient method of filtering varnish, I will conclude my remarks. The best filtering medium is fine cotton-wool, placed in a funnel. If a glass or vulcanite funnel be used, great difficulty will be found in cleaning it properly after the operation. I, therefore, recommend my readers to use a funnel made of thick writing-paper, which they can roll up and fasten with gum at a minute's notice. The opening at the lower part of the inverted cone should be about a quarter of an inch in diameter. A loose tuft of wool should be pushed, from the inside of the cone, into this hole, and pulled out about half an inch from the outside, so that it is jammed into its place. Pour upon it a few drops of alcohol, place it in the neck of a clean, dry bottle, and fill it up with your varnish. You will be pleased to see how clearly and freely the liquid filters through this little paper contrivance. When the operation is concluded, the paper funnel is thrown away, and a new one made when wanted. I may mention that varnish seldom wants filtering. Give it time, and it will throw down as a sediment any particles which it may contain.

## ON THE PRODUCTION OF PORTRAITS AT HOME.

BY VALENTINE BLANCHARD.



**N**ATURALLY one of the first desires of the enthusiastic amateur, after the arrival of the much-talked-of photographic set complete, is to produce successfully portraits of those nearest and dearest to him. He has acquired sufficient knowledge of focussing, development, &c., and is now eager to try his strength without the aid of his instructor. His will is good, and the nearest and dearest ones are only too willing to sit to him, for they have not yet passed through the bitter ordeal of the interminable sittings without adequate result—at any rate, from their point of view. But somehow, in spite of his patient efforts, those life-like and

artistic portraits he has so long dreamed of do not make their appearance on the eagerly-watched plate. If the attempt has been made out of doors, he looks in vain for the bright, flashing eye and the well-defined, perfectly-modelled features. Instead, there is a flat, expressionless face, with lustreless eyes, and the nose without any character at all worth speaking about.

If his disappointment leads him to try the largest and lightest room in the house, a new class of failures is the reward of his efforts. He has no trouble now about his high lights; but, alas! his shadows assert themselves too much, and represent nine-tenths of his portrait. It is in vain to call attention to the Rembrandtesque character of the picture; the fondest and dearest ones are now unmerciful in their judgment of his results, and plates and sensitive paper have been expended in vain.

It is, however, possible to produce good portraits in an ordinary room, and the object of the present paper is to show the best way to set about it.

Of course, some rooms lend themselves more readily for conversion into a studio than others; but if a fairly large room, with a moderately lofty window, is available, successful heads and half-length portraits can be obtained without much difficulty.

At the outset it will be necessary to have the upper part of the window clear of curtains, for every inch of the top is worth a foot of the bottom. In order to produce the most artistic lighting, the light should fall on the sitter at an angle of 45 deg. or thereabouts. It is necessary to put the sitter well into the room and away from the window, in order that the light may not fall too much on the side of the face, and in doing so the angle of light is necessarily very much lowered. To correct this disadvantage a portion of the light must be sacrificed, and the lower half of the window must be covered with some dark material. For experiment, the brown paper for putting under carpets, and sold in rolls, will be found very useful. A few good drawing-pins will make its application very easy. If the camera be placed in the corner of the room nearest the window, which should, if possible, face the north,\* and the sitter as far into the room as the focal length or the lens demands, and not quite opposite the window, but a little towards the corner, in a diagonal line from the camera, it will be found that the light on the face of the sitter will be agreeable, though possibly the contrasts of light and shade may be somewhat too abrupt—too much, in fact, resembling gas or lamp light. To remedy this as

\* If the north light cannot be employed, then an east window will answer the same purpose after twelve o'clock, or a west window in the morning, before that hour.



much as possible, a sheet or a newspaper should be laid on the floor, and a white screen placed near the shadow side of the face. A capital background can be made of a material known as felt-paper for putting under carpets. It is made of a neutral-grey colour, and has a texture admirably suited for the purpose. Being sold in rolls, any length can be obtained without any join or crease to mar its usefulness, and it is quite wide enough for half-length portraits. It has not been long introduced, but is getting well known, and most upholsterers, and many ironmongers and stationers, keep it. A folding Japanese screen, covered with an embossed small diaper pattern, makes an admirable background, for, by folding the screen so that the light falls on the flap nearest the shadow-side of the face, whilst the flap behind the light part of the figure is in comparative shadow, great contrast of light and shade is produced in the picture; for it will be seen that the lightest part of the figure falls against the darkest part of the background, whilst the shadow side of the figure is relieved by light. Monotony of tone in the background is thus avoided, and great solidity given to the picture. In fact, that most objectionable defect of the figure being apparently let into the background, like a mosaic, is removed.

Of course, it must be remembered that the light rapidly diminishes in power in its journey from the window to the interior of the room; and it follows, therefore, that lenses of long focus are not suitable for portraiture under the conditions spoken of above. Unless the window is unusually large, the best effect could scarcely be secured if the sitter were more than 9 feet from the window. More than thirty years ago, some very artistic Daguerreotypes were taken by the late Wharton Simpson in an ordinary room. The light was admitted through a large bay-window, and the sitter was placed about 7 feet away from it. Light was so important for this comparatively slow process that a lens of very short focus was employed.

The greatest difficulty to be encountered by the amateur—in London, at least—is to secure the light of the sky. If, when looking from the spot where the sitter is placed, its uninterrupted light be visible through the upper half of the window, no difficulty need be feared; but if, instead, only the brick walls of gloomy houses present themselves to view, other arrangements must be adopted. Under these latter circumstances, a south light will be found much the best; but it will be necessary to cover the window with tracing linen. This material can be obtained of great width, and could, if necessary, be put up as an ordinary rolling blind; for, being highly-glazed, and sold in rolls, there would be no difficulty in making it travel up and down in the

ordinary way. Of course, what has been said above about darkening the lower half of the window, would apply with even greater force, for the importance of the artistic direction of the light must never be overlooked. Photographers are well acquainted with the great illuminating power of white clouds, and in adopting this method of working, the amateur has practically converted the non-luminous object opposite his window into a light-giving cloud, not wayward and fleeting, but placed exactly where he desires it. One of the greatest charms to be found in the portraits taken by the electric light is its wonderful power of rendering the various gradations of tone in the flesh. The sun-lit window, as described above, will produce very nearly the same effects, for the two methods of lighting will be found to resemble each other. In the electric arrangement the light itself is screened from the sitter, but falls upon a large white disc with great intensity, and this becomes, as it were, an immense moon of great illuminating power. By the method above mentioned, the window becomes a square moon of equal intensity, and the results will be found to resemble each other in an unusual degree. I have mentioned above a south light only, but, of course, it follows that if an east window is employed in the morning, or a west window in the afternoon, the same results would follow, if only the tracing linen blind be illuminated in the same way.

Shortly after the introduction of dry plates for portraiture, some very charming studies of children taken in the nursery were exhibited at one of the Photographic Societies' exhibitions. The room was evidently very light, and the reflection from the light walls and bed-clothes all helped in giving delicacy to the pictures. The children were taken rolling and tumbling about the bed in the most unconstrained attitudes, and the originality of these photographs attracted everybody's attention. Mention is made of them to suggest to the amateur that he is not by any means bound to the cut-and-dried studio effects in his attempts at portraiture at home.

A young lady of great artistic ability, who has only practised photography for a year, produced some well-lit groups by the aid of magnesium light. Two strands of wire were waved about on the right side of the camera, and held at about an angle of 45 deg., whilst one strand was burnt for a short time on the other side to light up the shadows. In showing the pictures, she said that as she was certain the light and shade would have been too cutting if the magnesium had been kept still, the light was waved about over a considerable area, in order as much as possible to diffuse it.

Enough has been said in order to indicate the direction in which to work; but we hope to have something further to say on the subject shortly.



## INSTANTANEOUS WORK.

BY THE EDITOR.



EARLY all beginners in photography make up their minds to at once go in for instantaneous pictures. They are familiar with certain photographs of swans, express trains, &c., which they have seen in shop-windows, so that it is evident that the thing can be done. And, if so, why should not they do similar work? One of the most blissful attributes of ignorance is that which enables a man to enjoy the anticipation of successfully accomplishing something that he knows nothing whatever about. The simple youth who did not know whether or not he could play the violin, because he had never tried to, is a model of modesty when compared with certain photographic aspirants. "Wrens make prey where eagles dare not perch," says Shakespeare; and Pope, in a better-known line, expresses the same thought when he speaks of certain people rushing in "where angels fear to tread." Those who have had some experience in camera work will know that a successful instantaneous picture is the exception, and not the rule. Look over any photographic exhibition. Such pictures form an extremely small percentage of the whole. Or let any photographer who has stored away the negatives of many years enumerate those which have been taken instantaneously, as it is called, and he will probably find that the number of such pictures which he has deemed worthy of preservation may be counted on the fingers of one hand. Perhaps I should except marine studies, which are generally taken under such favourable conditions of light that they are comparatively easy to secure.



Fig. 1.—Reproduction of an Instantaneous Photograph, by MM. Lumière, of Lyons.

To obtain a good "shutter" picture several things are necessary, and these things must work together and play into one another's hands, so to speak, in a way not commonly experienced in this world of small worries. First of all, the gelatine plates must be of the most sensitive description, and must bear out what the maker publishes concerning their capabilities. They do not always do so, as many workers have found to their own cost. Next, sunlight is indispensable, and the sunlight of a spring morning is the best of all, for the actinic value of the light fades as the day and as

the year grow older.

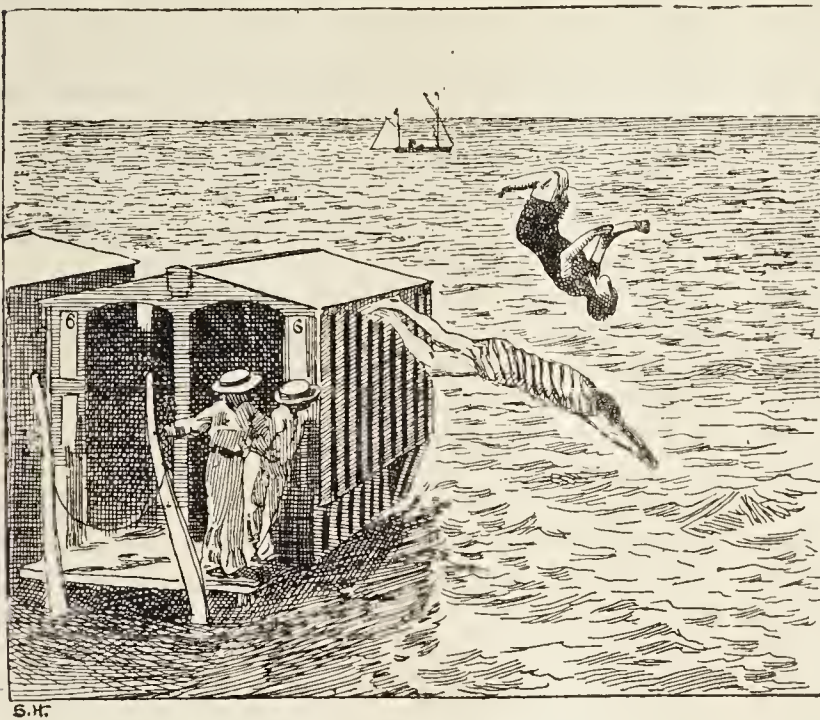
Thirdly, the lens must be of the rapid type; and, finally, the shutter must work well. Some shutters have a trick of falling from the lens at the moment of exposure; others will leave half the plate unexposed. I lately saw a picture having this peculiarity. It was a skating scene, which would have been an admirable picture if it had been complete. As it was, it consisted of a study of legs. The shutter used was of the flap type, and through some flaw in its mechanism it had stopped half-way in a good action, with the result I have described. Even if the plate, the lens, the light, and the shutter be all of the most perfect kind, success is impossible unless the operator have all his wits about him.

In most cases the object which forms the subject of an instantaneous picture is in motion, and is of such a nature that the camera can be adjusted in position, waiting for its arrival. The spot on or near which the object is expected to appear must be focussed beforehand, and then the operator must wait, "ready to fire," till the supreme moment. Much judgment is required, both in focussing and in choosing the right place in the picture for the coming object. Another more difficult, but quite necessary thing, is to obtain an image of proper



size. This is far more difficult than it would seem. Suppose, for instance, that the photographer is standing on a pier watching the arrival of some steamer whose picture he wishes to secure. The vessel is in sight for several minutes before it comes within striking distance. But, as it nears the pier, it looms so large on the vision that the operator is liable to forget himself, and to touch the trigger of the shutter too soon. The result is often a blurred image, because it is out of focus, and one so small that the big steamer is reduced to a nutshell floating on a waste of waters. A perfect camera for instantaneous work would be one with two lenses carefully matched—one to do the work, and the other to furnish an image on an extra focussing-screen, which could be watched by the operator as

of mine, who showed me a fine negative of a flash of forked lightning, admitted that he used up more than seventy plates before he secured this one with an image upon it. This is an exceptional number of "dead-heads" to own to; but it is easily accounted for when we remember the circumstances under which a lightning-flash is photographed. The uncapped camera is pointed at night during a thunderstorm, towards that portion of the sky from which the lightning has been seen to come. The next flash may possibly be far away on the other side of the outlook. Its image is not secured, but its light spoils the plate. This may occur again and again, the lightning playing in the right place half-a-dozen times, but always at the moment when a plate is being



Figs. 2 and 3.—Reproductions of Instantaneous Photographs, by Dr. Alabone.

he took the picture. A good camera "finder" would, of course, answer the same purpose.

It is far from my wish to dissuade my readers from trying for instantaneous effects—for I regard such pictures as being among the most interesting which the camera can afford. But I most strongly advise beginners to have nothing to do with shutter-work until they have mastered the A B C of the art which they have taken up. When they are sufficiently advanced to produce three or four good negatives out of every dozen plates they purchase, it will be time for them to think of instantaneous work, some of the difficulties of which I have endeavoured to point out.

That most wonderful results have been achieved in this branch of photography is known to all, but no man, except the operators (who carefully keep the statistics to themselves), knows how many spoilt plates go to each successful one. A friend

changed. But even with more ordinary subjects some little thing will go wrong at the last moment, and the picture is spoilt.

Oh, ever thus from childhood's hour  
I've seen my fondest hopes decay.

More fortunate have been the photographers whose work is here reproduced as examples of what can be accomplished with rapid plates in skilful hands.

The first example is the work of MM. Lumière, of Lyons. It represents a man cleaning a window by throwing a pailful of water over it. Although it is a truth that many instantaneous pictures are not artistic, it is also true that they exhibit features which few artists would ever succeed in representing correctly. The shadow of the man and the shadow of the stream of water shot from his pail, have an unfamiliar, incorrect aspect about them due to this cause. In such a sense, the



picture is inartistic. But the attitude of the man is admirable. In the effort to cast the water to the highest point, his arms are for the moment strained upwards, and one foot has been half raised from the ground. The compressed lips and the frown indicate in a most expressive manner that an effort is being made, and also that a return shower of water may presently be expected. It is evident that this picture has been taken in brilliant sunshine. The lens was a Steinheil, fitted with an instantaneous shutter by Messrs. Tury & Amey, of Geneva. Like most continental photographs, this one was developed with ferrous oxalate.

The other two pictures are from photographs by Dr. Alabone, who has kindly furnished me with the following details concerning them. The picture of the divers was taken last year at Westgate-on-Sea. The time was half-an-hour past noon on an August day, when the weather was somewhat dull. The lens was of the rapid doublet type, fitted with a vulcanite shutter, the motion of which was quickened by three elastic bands. The divers are Messrs. Slaney and Beckton, who teach swimming at Westgate, to the great advantage of residents and visitors. Dr. Alabone tells me that his chief difficulty in taking this photograph was to keep off the people who would crowd round the camera. He ought to think himself lucky that one of their unwelcome heads does not appear as the chief feature in the composition. I have several landscapes which are adorned thus—of course, they are spoilt as pictures, probably from the abnormal thickness of the heads in question.

The other picture, of the two boys playing leap-frog, is also a gem. No one can fail to observe that it has been taken in a minute fraction of time, for no boy could remain, except for a fraction of a second, poised on the tips of his fingers. The photograph was taken in August at noon, during bright sunshine. The lens was a rapid symmetrical, controlled by a pneumatic shutter. Both pictures were taken at the sea-side, where the light is generally of the best, and Dr. Alabone may well be congratulated upon them.

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## HINTS TO SITTERS.

BY ADA S. BALLIN.



FROM the very beginning of photography, portraiture has been the branch of that art to which most attention has been devoted, and which has always been the most popular. Yet how is it that while our albums and shop-windows are full of perfect pictures of landscapes, interiors, and still-life generally, a good portrait is the exception rather

than the rule? The answer to this question is not far to seek, for, while in the former cases the artist has full control over his subjects, and can select the best aspects and most favourable lights, in the latter there is the disturbing element of the sitter's will; and it would not be an exaggeration to say that nine out of every ten portraits are spoiled by the ignorance, bad taste, obstinacy, or nervousness of the sitter.

In the matter of dress, ignorance and bad taste are especially exhibited, and in this the photographer is entirely at his client's mercy.

It must not be forgotten that photography often represents light parts too light and exaggerates dark shades. Hence violent contrasts in light and shade should be avoided when dressing for one's photograph, and large dark patterns on light grounds should be tabooed. Bodies and skirts of different colours or shades do not come out well; they mar the harmony of the picture, seeming to cut the figure, and making it look shorter and broader than natural. All stiff lines and irregularities in the cut of dresses are inartistic, and if none but an ugly dress is available, it is better to be taken in vignette.

The colour of clothes is very important, the cold colours, such as blue and violet, coming out almost white, while the warm colours come out too dark, yellow turning to black. Yet dark girls very frequently enter the studio attired in some shade of blue, which being represented in the photograph as white, makes their complexion appear by comparison as swarthy as that of a negress. On the other hand, pale, fair girls come in black, or some colour which is translated as such, and their faces thereby acquire the tint of a typical ghost. I have in my possession the portrait of an old lady taken in a black dress, with a large black bonnet and veil. The effect is most weird, the sable garb seeming to retire into the background, which is somewhat dark, while the face stands out in startling whiteness like that of a corpse. Pale, thin persons should wear light clothing, and light colours are also suitable for children. The sameness of tint may be relieved by the dress being finished off at the neck with a collar of lace which has been rinsed in coffee-water. Dead-white lace and white linen collars are most unbecoming, and one of the reasons why men look so much better when photographed in uniform, boating or cricketing dress, is that they have got rid of the terrible "masher" collar—an article as hideous as it must be uncomfortable. White waistcoats and shirt-fronts appear as daubs of white. Concentrating the light upon themselves, they also rivet beholders' attention, and throw the head and face, metaphorically speaking, into the background. If a man feels it his duty to be photographed in an ordi-



nary white collar and shirt-front, he should be careful to have them well crumpled.

Dark-complexioned people and those who are stout should wear dark clothes, light clothing increasing the apparent size of the figure. A black ball-dress is very effective if the neck is bordered with lace, so that the skin shows through, and thus prevents the violent contrast of the white neck against the black material; and the lace must be similarly arranged on the arms if they are bare.

People with short, thick necks should wear the clothing so as to expose the throat, and high collars, lace swathings, velvet bands, necklaces, and similar ornaments should be discarded. On the other hand, those who have long, thin throats will improve their appearance by a somewhat fussy trimming round the neck. A velvet collar looks well if it has something to relieve the abrupt contrast with the neck at the edge; but I had a beautiful portrait spoilt the other day by wearing a dark velvet collar without any such relief, the consequence being that I look in the picture as if I had no neck at all, this effect being exaggerated by the bend of the head.

Fur next the skin is becoming to almost every one, and I have seen one or two very pretty pictures in which ladies were represented in evening dress in the act of throwing off a fur-lined cloak. Men never look better than with fur collars to their coats. As a rule, a rough surface next the skin is far more effective than a smooth one, since the former leaves the eye free to contemplate the smoothness of the skin. For the same reason the hair should not be greased for several days before going to the photographers; if it is greased and brushed neat and smooth, it not only looks like the hair painted on the head of a Dutch doll, but, by reflecting the light strongly, it detracts from the attention which is due to the face. Both ladies' and gentlemen's hair should be arranged in a *négligé* manner, not being abruptly brushed off the face, but, as it were, framing and setting it off. It is because the rough surface breaks the lines of sight that a lace or gauze veil on the head is so becoming in a photograph.

Light-blue or grey eyes are apt to come out too pale, and I hope I shall not be thought wicked if I say that the appearance of these eyes in particular, and I might add of all eyes in general, is improved in the photograph if a suspicion of charcoal is rubbed in round the eyelids before the operation begins. If the eyebrows are likely to come out white, they had also better be slightly outlined in the same way, just for the occasion.

This brings us to consider the expression of the face, which, after all, is the most important consideration. No one should be photographed when he or she is in ill-temper or ill-health. It must not be forgotten that the momentary expression of the

face, whatever that may be when the cap is removed from the lens, is stereotyped, and that thus the fleeting shadow of a pain or a passion may be handed to your friends and to posterity as the predominant expression of your face. The effects of a sleepless night, a toothache, a headache, or the annoyance of having had to wait your turn with the operator, may stamp you as an invalid, a sullen or an ill-tempered person. When one is in good health and in good spirits is the time to have one's portrait taken.

The same advice given by *Punch* to a young lady should be bestowed on all sitters—"be natural." But this is what few are content to be. Thorwaldsen has told a good story of Byron illustrative of this fact:—"He sat down opposite to me," he says, "but assumed, immediately I commenced, a perfectly different expression. I called his attention to this. 'That is the true expression of my face,' replied Byron. 'Indeed,' I rejoined; and then made his portrait exactly as I wished. All persons declared my bust to be an excellent likeness. But Byron exclaimed, 'the bust does not resemble me; I look much more unhappy.' The fact was that at that time he wished to look intensely miserable." But, if persons with such a preconceived notion of what they desire to appear come to a photographer, he is helpless, and they, as it were, perpetrate a libel upon themselves. Thus, people with snub and rubicund features assume a tragic or determined air, while those cast in a sterner mould try to soften their expressions by summoning an idiotic smile. A blue-socking will struggle to look *provoquante*, while the *piquante* blonde endeavours to appear the subject of blighted affection. The maid apes the demeanour of her mistress, and the valet unintentionally caricatures his master; but the lady of refinement would fain have her portrait resemble that of some third-rate actress, and the gentleman of good birth does his best to look like a stable-boy. The best one can do in the matter of expression is to try not to think how one is looking, but to direct the thoughts to something pleasant, so that the expression, following the bent of the mind, may naturally become an agreeable one. There is nothing more irritating than a stereotyped smirk put on for the occasion.

With regard to pose, obstinacy is often a cause of failure, for most people think that they can pose themselves better than the artist; and though a few may really be able to do so, this is not true of the many. There are, however, a few hints by which every one may profit. The first thing to remember is that the part which is nearest to the camera appears the largest in proportion to the rest of the picture. For example, if one foot or one hand is advanced, it will be represented enormously large; and if a corpulent person, as sometimes happens,



insists on being "taken" seated facing the camera, and leaning rather backwards, the consequence is that he or she comes to resemble a large barrel with a little cocoa-nut perched on top by way of head, the neck being consigned to oblivion. Short people should, therefore, be taken standing, and preferably in vignette; if rather aldermanic in build, the profile of the figure must not be allowed to appear unless a caricature is required. Full-length figures are rarely desirable, except in the case of children, "three-quarter length" being the most favourite and most generally-suitable style.

Those who have unpronounced features look well in "full face," but if those who have strongly-marked features are so represented, they are frequently not recognisable in their portraits. For the latter class a "three-quarter face" is preferable, especially where the nose is well shaped. In a photograph, we can have only one view of a face or figure, and we must therefore aim at getting the best view. Very frequently, although it would not be noticed in an ordinary way, one side of the face is better looking than the other. In such cases, the hair should be dressed to suit the better side, and it should be presented in "three-quarter-face, or nearly as a profile. Thin people with superabundant angles are best seated at some apparent occupation, and with a background of a similar tone to their clothes, which will not throw their figures too prominently forward. For these also, and indeed for the majority, the best position of the head is "three-quarter-face," the face being so turned as to avoid accentuating the angles of the nose and chin.

Nothing incongruous must be permitted either in the pose or accessories of the picture. For example, it is not uncommon to see a "photo" of a gentleman seated and looking up adoringly into the face of a lady who is standing, leaning over his chair. I have seen a picture done by a celebrated firm, in which a lady is represented with her hat in her hand leaning against a stile, on which a gentleman is sitting with a new stove-pipe hat planted firmly over his brows. Such things are absurd; if gentlemen were to behave so in real life they would no longer deserve to rank as such.

All accessories should be subordinate to the general idea of the picture. For example, if a lady has beautiful hair and wishes to show it off, she may be taken in her peignoir, brushing the hair before a looking-glass; but the background must not be such as would be suited to a drawing or dining-room. Again, if the sitter has ugly hands, dark gloves may be worn; but these would be out of character with an ordinary indoor dress, and walking or evening dress must, therefore, be chosen. A full, rounded figure looks well in profile, and the arm may be raised, holding back

a bough or a curtain, the head being slightly turned over the shoulder so as to show the face to advantage. All the parts of the body should be arranged to be as far as possible on a level as regards the camera, and it is well to remember that anything, such as a chair, small table, or the traditional piece of balcony, placed in the foreground between the sitter and the lens, dwarfs the figure by being represented on a larger scale. Conversely, such objects placed behind the sitter increase his or her apparent height.

A great many more hints might be given on this subject; but the above are sufficient to show that what is chiefly required is a little thought and much study of one's own person, and the fitness of accessories with regard to its peculiarities. Like the "written word" of the Latin adage, the photograph "remains," and we should, therefore, not rush indiscriminately into print, but endeavour to be reproduced in the best possible way and under the most favourable circumstances.

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TEST FOR HYPO.—To detect a trace of hypo in washing water, or in a print, iodide of starch offers one of the best means possible. When a print is tested, it should be soaked in a small quantity of water in a test-tube and the resulting liquid tested. The process is really simplicity itself, and if the liquid could be kept in a bottle, like collodion or ammonia, it would very probably be more frequently employed than is now the case, but, hitherto, it has been customary to make the starch solution as wanted, with the result that nobody ever uses it. The following method of carrying out the process is given in a foreign journal, and by its means the starch-potassium-iodide solution is always at hand. A small quantity of starch is well mixed with about ten times its weight of water, and about half that quantity of a 50 per cent. potash solution added. After being well shaken, this forms a gelatinous mass, which must be diluted with ten times its bulk of water, to which has been added as much iodide of potassium as would be about half the weight of the starch. The solution is completed by bringing to boiling point, with repeated shakings, followed by filtering when cool. The value of this method is so great, and the actual desirability of testing beyond argument, that it is to be hoped the publication of this simple plan may lead to the photographer always having on his shelf a bottle of solution which will enable him any moment to test any body suspected of containing "hypo." The cards used for mounting upon are often great sinners in this respect, but by cutting one of them, or a portion of one, into thin slices, and digesting in a test-tube for an hour, this solution will enable the most minute quantities to be detected.

—*Photographic Times.*



## ON PHOTOGRAPHS.

BY JOSEPH HARRIS.



It has been written that in the multitude of counsellors is wisdom. To the neophyte matters would be much simplified if advisers preserved some show of unity in their counsel. It is a gratifying sign that in photography, writers are more and more urging an artistic education in preference to the acquirement of a rudimentary chemical knowledge. Not that the photographer can afford to be destitute of a certain insight into chemistry; but, as far as the practice of the art is concerned, a good photograph is no more a matter of grains and fluid ounces than is the production of a perfect drawing dependent upon the employment of red or of brown sable. What is a perfect photograph? A perfect photograph is the work of one who by culture, aided by natural ability, is an artist. Mere book reading, unassisted by study, will no more turn out a photographer than a pianist; and the same amount of drudgery which the latter has to undertake, before he can hope for proficiency, is equally incumbent on the artist of the camera.

The object of this paper is to give this study, this drudgery, a direction and a shape; for as it is futile to discourse on the illuminating value of light to one whose knowledge of the subject is limited to the blending of day into night, so is it commencing at the wrong end of the theme to speak of balance and composition to one who has not the remotest idea of drawing. *The hand and the eye must work together. And the only way to cultivate the eye is to practise the hand.*

Nearly every professional photographer of the day can discuss "the pyramid form" of composition. And he puts it into work by placing one head at the apex of his pyramid, and one on either side, so as to form a perfect equilateral triangle! But if the poor man had had but a year's instruction in drawing, and that even taken at evenings, he would have become sufficiently *skilful*, and therefore sufficient of the *artist*, to avoid the perpetration of so glaring an error. It is all very well to write that in composition, parallel lines should not be formed by the position of the arms or legs of the figure or figures; but if the eye has not been educated through the hand, these and other incongruities will be as plentiful as rabbits in a warren, simply because the mistake is not discernible to the uninitiated until it has been committed.

Some writers urge a study of the masters as an aid to composition. Very good advice to a capable recipient. In the result it but too often leads to a direct copy of some particular pose, and making that one pose do duty for every sitter, till the pain-

ful uniformity of the negatives causes a dawn of consciousness that it is high time another position was selected. It cannot be too strongly urged that without some knowledge of drawing it is an absolute impossibility for a "study of the masters" to be made. A certain arrangement of the human form gives satisfaction even to the uncultured eye. Why? Train that eye by the hand, and it will perceive *how* this effect has been produced. But all men cannot draw—neither can all men become photographers—their natural vocation lies in another direction.

Take as an illustration the ordinary vignette portrait, and ninety out of every hundred specimens we see exhibited are most miserably out of drawing. The shoulders are not balanced, and one of the first lessons the tyro will learn in his practice on the bust will be to balance his shoulders. Perhaps on the principle that the "most luck attends" some, the shoulders may be correct in line, but the effect will be marred by a drooping chest, by the head turned the wrong way, and from this sweeping condemnation very few photographers are exempt.

The perusal of books is valuable in the extreme as a study for the brain; but this perusal must be accompanied by the due culture of the eye through the hand. We should be rash to attempt the construction of a pair of boots on the strength of an acquaintance with certain treatises on the art of Crispin. The bricklayer, the hair-cutter, requires an apprenticeship; but the photographer's art, according to some, appears to come by intuition: "feel it," and the thing is done. "Give me a few high-sounding medical phrases, so that I can astonish the old gentleman," exclaims the pretended assistant in "Le Medecin malgré lui." A little talk about equivalents, pyramids, balance, and bromides, and the embryo has suddenly burst forth into an astonished world as a full-blown photographer. And this is just the reason why there are so many bad photographs.

The fine art of the photographer requires as much diligence and up-hill study as the fine art of the painter or the sculptor. Mere reading will never suffice. And experiments in emulsions, modifications of developers, and dabbling in chemistry will never lead to perfection.

How is it that in ordinary portraiture we see so many faces with too much tone on one side and too little tone on the other, while others are all tone without shadow or light? Our "art-photographer," whatever that term may signify, will blame his plates, the weakness of the light, the darkness of the day; but formulæ and emulsions should not be the scapegoats in these cases. If the perpetrators of these eccentricities had the power to use the pencil, they would quickly realise the delicacy of tone in the human face; that in no



part of it must the brightness of the monochrome of the photograph equal in brilliancy the brightness of the white parts of the dress. The defects noted would then be regulated, not by chemical dissertations, but by judicious and artistic lighting.

Not long since a group was arranged in one of the London studios, representing the strong scene of a certain drama. It was essential that one of the figures should be recumbent. A Thespian present, whose meditations had evidently wandered far from the sublime, asked of the outstretched actor how he felt? The reply pointed a moral: "I feel like an ass!"

It is not too much to say that, with the means at their command, photographers have not, as a body, made the most of their opportunity. And the improvement which is even now taking place will not be hastened by never-ending experiments with appliances. It is in the study of the human form photographers will display their ability and their power in the near future, and the more severe their study in the art of drawing, the sooner and the greater will be the public gain.

## Sayings and Doings.



THE fifty-fourth annual Exhibition of the Royal Cornwall Polytechnic Society will open at Falmouth on Tuesday, Sept. 14, 1886. Medals and prizes are offered for excellence in different departments of science and art. There is a section for photography, and both amateurs and professionals are invited to send pictures which have been executed within eighteen months of the opening of the Exhibition. Medals are offered by the Society for the following classes of exhibits:—

1. Landscapes.
2. Portraits.
3. Composition pictures.
4. Instantaneous pictures.
5. Interiors.
6. Transparencies for the lantern, or for window decoration.
7. Pictures by improved processes.
8. Enlargements.

Those of our readers who may wish to compete can obtain all particulars by applying to Mr. W. Brooks, Laurel Villa, Wray Park, Reigate, who for many years has undertaken the supervision of this section of the Falmouth Exhibition.

THOSE amateurs who happen to be passing through London, and require the use of a dark room, and who do not happen to be members of the Camera Club, can meet with the same advantages at 110, Regent-street, where the London Stereoscopic and Photographic Company have devoted a room, replete with all necessities, to their special use. This will be a

great boon to lady photographers, for at present the Camera Club is reserved for the sterner sex.

MR. W. BENTLEY, of 53, Coney-street, York, has just opened a similar room at that address for the use of amateurs who go North. The convenience to the travelling photographer of having a place where he can develop his plates *en route* is one which cannot be over-estimated. Apart from other advantages, it offers an opportunity of occupying a wet day in a very agreeable manner, instead of fretting life away in the coffee-room of an hotel and abusing Jupiter Pluvius.

EVER since Mr. Bolas contrived his "detective camera," some six years ago, there have been attempts innumerable to imitate and improve upon it, but so far as results go, it has not yet been surpassed. The most hopeful thing of the kind which we have seen has recently been patented, and will probably be in the market by the time, or soon after, these words are in print. We have handled the camera and put it through its paces, and it certainly is the smallest, best-disguised, and most easily-worked apparatus of its genus which has yet appeared.

THIS new photographic detective has the outward semblance of a neatly-bound octavo volume of about  $1\frac{1}{2}$  in. in thickness. It weighs a few ounces only—probably less than a real book of the same size—and can, therefore, be easily carried under the arm. (Nature has apparently designed this place in the anatomy for a book—as she has left a space between the ear and the head for the pen.) In the centre of the back of this pseudo-volume is a sunk lens, of the rectilinear type. The book can be opened, and then it is that it is first noticed that it forms a wedge-shaped camera, with flexible top and bottom. The dark slides are of the ordinary double pattern, but ebonised, and they are of the  $\frac{1}{4}$ -plate size. A shutter, working behind the lens, and therefore quite invisible, is set by a brass stop, concealed by a book-marker, and is actuated for exposure by pressing a part of the cover of the book.

THE student who is in the habit of carrying a book under his arm will now become the object of suspicion, and sensitive people will be careful to get out of his way. The detective will possibly often be detected, in the same way that an individual was once pounced upon by a custom-house officer for concealment of dutiable goods under somewhat similar circumstances. The bulky volume under his arm was taken from him, and was found to be pierced with round holes from cover to cover—in which were deposited a few dozen watches. This book is now preserved at the Custom House, among those specimens of misplaced ingenuity by which those who are "childlike and bland" have sought to defraud her Majesty's revenue.

A NEW departure in the well-trodden field of portraiture is refreshing. Not many years ago, the



attitudes which the average photographer made his sitters assume were only two or three in number. The favourite pose was a standing figure, with one hand on the breast, and the other hung over a fluted column, which seemed to be cut in half for the express purpose, at the requisite height from the ground. On account of the forward position thus given to the hand, that member assumed an awful size, and the general effect was more ridiculous than sublime. Now, however, photographers are better educated in their art than they were at the time referred to, and they vary the positions of their subjects with much ingenuity and with good results.

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THE new departure referred to above is indicated in the annexed illustration, which is taken from a series of photographs due to the skill of a lady amateur, Miss Holford, who has taken a hint from the well-known picture of cherubim by Sir Joshua. As others may wish to experiment upon their little folk in the same manner, we give—with Miss Holford's kind permission—a brief account of the manner in which the portraits were obtained :—



The children, after having wood-pigeons' wings adjusted to their necks, and their bodies concealed with brown paper, were photographed against a dark background. The resulting negative was blocked out with opaque material, leaving only the heads and wings untouched. Upon a piece of plain glass, the same size as the negative, a sheet of tracing-paper was stretched, and in the middle of this was blocked out a space the exact size of the heads and wings in the negative. Upon the rest of the tracing-paper were painted fancy clouds. This paper-covered glass then represented a second negative—for printing—in the clouds after the heads and wings had already been printed on the silver paper. It is evident that, with most people, these clouds would represent the great difficulty; for few are gifted with the artistic talent possessed by the lady whose cherub we reproduce.

HERE is a little dodge for securing local intensity which comes from Mr. E. H. Jaques, and which was submitted by him to a meeting of the Birmingham Photographic Society:—"When developing, if I see any portion of the negative wanting in density, I adopt the simple plan of breathing through a paper tube upon the particular part, which softens the gelatine, and enables the solution to act more vigorously." There is another little dodge which brings about the same result—at any rate with some descriptions of plates—and that is, to hold the negative above the red lamp, so that the part which requires density is very slightly warmed. Every one knows that heat quickens chemical action, and for this reason most solutions are used more dilute in summer. But this application of the principle is not generally known.

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WE had recently the pleasure of advertizing to the beautiful Platinotype pictures exhibited by Mr. P. H. Emerson, of Southwold. We have now equal pleasure in calling attention to the fact that very shortly Messrs. Sampson Low, Marston, & Co., will issue a volume illustrated by forty Platinotypes by the same worker, entitled, "Life and Landscape on the Norfolk Broads." Associated in this work with Mr. Emerson is the well-known artist, Mr. T. F. Goodall, and from this partnership we may expect a publication of unusual interest. Subscribers to the volume will pay a sum of five guineas, but it will cost those who come later a guinea more.

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AT a meeting of the Photographic Society of Philadelphia, held last month, Mr. Wood offered a useful contribution to what is known about the local reduction of negatives. If certain parts of a negative appear to be too dense—as they almost invariably are in the case of windows, when such inconvenient objects cannot be excluded from a photograph of an interior—he recommends the following treatment. A piece of writing-paper has an orifice cut in it of the shape and size of the objectionable part of the negative, and is laid over it. Ordinary indiarubber is now used, just as it might be employed for erasing pencil-marks, with the result that the over-dense film is speedily worn down and reduced. A speaker who followed Mr. Wood pointed out that this was merely a modification of the plan previously known, of reduction by rubbing with fine emery powder, and he stated that indiarubber prepared for erasing purposes contained diatomaceous earth, so as to confer upon it a gritty property. We fancy that there is some confusion of facts here. What is sold in the shops as "ink-eraser" is vulcanised rubber charged with some gritty material in the way suggested. But the india-rubber used for rubbing out pencil-marks is certainly pure bottle-rubber, without any such addition. Which is the right material to use for the local reduction of negatives does not appear to be quite clear. We should think that ink-eraser must be the right one, but the matter can easily be settled by experiment.

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AS will be seen from our advertisement columns, we are organising a photographic excursion to Paris and its environs—including in the tour Rouen, the



beautiful scenery of the Seine and the Marne, St. Cloud, Versailles, and many of the battle-fields of the War of 1868. This is the first enterprise of the kind which has ever been proposed, and it is likely to be well supported by those votaries of the art-science who wish for a pleasant excursion in company with brother photographers, with whom they can take pictures and exchange notes.

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### MR. J. B. DANCER.

*To the Editor of THE CAMERA.*

DEAR SIR,—Will you oblige by allowing the following letter to appear in your columns?—Yours faithfully,

ABEL HEYWOOD, Junr.

Higher Broughton, Manchester,  
June 22, 1886.

“Some days ago there appeared in the Manchester papers a letter from Mr. J. B. Dancer, recalling to our notice the large share that gentleman took in the introduction of photography to Manchester and Liverpool. But photography is only one of the many arts and sciences indebted to him; and though it is neither possible nor necessary to give a detailed catalogue of those services, the list that follows cannot be without interest to the Manchester public, whose townsman Mr. Dancer has been for more than half his lifetime.

“Of his connection with photography he has himself written, though in the modest and imperfect way one would expect such a man to write about himself. There is the stereoscopic camera with twin lenses, which, as he explained, he was the first to make. He invented microscopic photographs, which so much delighted and astonished us twenty-five or thirty years ago. He also introduced photography to the magic-lantern, being the first to show a photographic transparency on a screen; and the exhibitions which men of middle age will so well remember at the Mechanics’ Institution, when Mr. E. Hutchins was the secretary, were largely due to Mr. Dancer, and were the first ever held. The lantern itself is also indebted to him, not only in its optical parts and its construction generally, but also particularly in the application of the oxy-hydrogen light, and for a dissolving gas-tap, which saves half the gases and produces the best dissolving effect.

“Then there should be mentioned, as of much greater importance than the above, the automatic ‘contact breaker,’ used probably by the million at this moment, in every induction-coil in the world. Prior to Mr. Dancer’s invention, contact used to be made and unmade by hand, in a vessel containing mercury. The first helical coil with the vibrating interrupter was constructed by Mr. Dancer, and was exhibited long after by him at one of the soirées of the British Association, when the meeting was held in Manchester.

“When Mr. Dancer established himself as an optician in Manchester, his presence soon made itself felt amongst the few microscopists then living in the district. Good microscopes were then costly, and worthless ones very common. Mr. Dancer successively brought out several forms of instruments, as excellent in their mechanical and optical arrangements as they were moderate in price. Instruments fully equal to the requirements of original research were thus brought within the reach of many whose observing faculties were more conspicuous than their financial resources. It would be difficult to over-estimate the stimulus which Mr. Dancer thus gave to Manchester microscopy; it cannot be doubted that the present energy of our local microscopists is the direct outcome of the impulse which their means of research then received.

“Not only so, but the value of the new instruments was recognised outside our city by such men as Mr. Quekett, Dr. William Carpenter, Dr. Gideon Mantell, and Mr. Bransby Cooper, all of whom were familiar with their excellent

qualities. These facts suggest that Mr. Dancer’s claims upon us are worthy of recognition by many now treading in paths which he made easy for them, though personally a stranger to them.

“This is a considerable catalogue for one man to be concerned in; but it does not complete the list. Mr. Dancer mentions the porous jar in his letter, which he was the first to suggest in the Daniell’s battery, and which it is difficult to over-estimate the importance of. There are also his improvements in levels; the speed counter; an instrument for testing coloured fabrics for calico-printers; improvements in air-pumps; improvements in voltaic batteries, &c., &c.

“It is sad to have to say that, notwithstanding Mr. Dancer’s talents and achievements, he is now living in very straitened circumstances; he is, moreover, afflicted with almost total blindness, and is therefore unable to follow the optical business to which his life has been devoted. It is not an unusual thing for a man of great mechanical ingenuity and skill to be an indifferent man of the world, and so it has been with him; as a business man he has been a failure. He has made improvement after improvement, invention after invention, any one of which might in “pushing” hands have made a fortune; but more interested in science than in money-making, he has allowed the golden chances to become public property, and has thus remained poor himself, while the world has reaped the advantage of his labours.

“Mr. Dancer is now in his seventy-fourth year, and we beg respectfully to suggest that in his hour of darkness the world should pay back to him something for that which it has freely received at his hands.

“We propose that a subscription be commenced forthwith, with the object of purchasing an annuity, payable during the joint lives of himself and Mrs. Dancer.

“We are willing to form the nucleus of a committee for carrying out this project, and invite all friends to Mr. Dancer to join us in obtaining subscriptions. Mr. T. R. Wilkinson, manager of the Manchester and Salford Bank, has consented to act as treasurer, and cheques can be paid to his order, or payments to the credit of the “Dancer Subscription” will be received at the Bank.

J. P. JOULE, LL.D., F.R.S., Sale.

Prof. W. C. WILLIAMSON, LL.D., F.R.S., Owens College.

Prof. BALFOUR STEWART, LL.D., F.R.S., Owens College.

JOHN DALE, F.C.S., Cornbrook, Manchester.

LEO H. GRINDON, Manchester.

S. PLATT, J.P., Oldham.

CHARLES BAILEY, Hon. Treasurer Manchester Literary and Philosophical Society.

JAMES BIRCHALL, Hon. Sec. Liverpool Literary and Philosophical Society.

ABEL HEYWOOD, JUN., Higher Broughton (Hon. Sec. pro tem.)”

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### NOTICE.

*The EDITOR will be glad to receive literary and artistic matter of general interest to Photographers; and begs to direct attention to the following rules:—*

*All communications should be addressed to the EDITOR OF THE CAMERA, 15, Bedford-street, Covent Garden, London, W.C.*

*Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.*

*All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.*

*If stamps be sent to cover cost of postage, the EDITOR will do his best to ensure the safe return of contributions which he is unable to make use of.*



# ✻ THE CAMERA ✻

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

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## Sayings and Doings.



WE wish all success to the Photographic Convention which is to meet at Derby during the present month, when professionals, amateurs, and all interested in the art will meet together for friendly intercourse.

As at present arranged, this conclave of sun-worshippers will assemble at Derby on the 12th inst., and remain there for three days. In the daytime they will take excursions to places of interest in the neighbourhood, and will take their cameras with them. The evenings they will devote to the reading of papers, exchange of notes, examination of prints and new apparatus. The honorary secretary, Mr. J. J. Briginshaw, of 21, Albert-road, Walthamstow, will be glad to receive without delay the names of gentlemen wishing to exhibit pictures or apparatus, and he will be happy to give all further information concerning the Convention to any one who will write to him. The subscription is only five shillings.

✻ ✻ ✻

WE read in a contemporary that "the late King of Bavaria had a strong objection to sitting for his portrait; and it is said that when he began to get stout, as he did during the later years of his life, and it was represented to him that his existing photographs did not accurately portray him, he had the photographs altered with the brush rather than sit afresh." We presume from this statement that a royal retoucher was attached

to the Court of Bavaria, whose duty it was to add artistic bits to the king's portrait, as the original form increased in corpulence.

✻ ✻ ✻

THERE was certainly no such retouching necessary in the case of the portrait of another monarch, who was the unconscious subject for a photograph the other day. For his form, instead of having increased, had very much shrunk. The royal shadow had indeed become less. We allude to his majesty Rameses III., whose mummy was recently discovered and unbandaged. But before this last operation was commenced, it was placed erect and photographed.

✻ ✻ ✻

MR. PUMPHREY, of Birmingham, has recently sent us a sample of his flexible glass films—together with a small transparency printed on a piece of it. The material is about as thick as writing-paper, is perfectly clear, and appears to be prepared from gelatine, which has by chemical means been rendered insoluble. The little picture is as perfect as one on glass; while its weight is one-twentieth less than a picture of the same on glass would be. This new method represents an important contribution towards that goal to which all our photographic experimental workers are at present urging their energies—the production of a substance which possesses all the main properties of glass, without its weight and brittleness.

✻ ✻ ✻

SOME few months before the late lamented Mr. Woodbury died, there were rumours that he had produced a material which answered the above



description, and we now learn that it will shortly be in the market. We do not yet know the exact form in which it will appear. What is really wanted is something so like glass that it can be used in existing apparatus without any tiresome modifications. Of course, there are many fortunate beings who can afford to buy the latest thing out, and do not grieve because their old apparatus is wholly discarded; but there are a great many more who cannot do this. Take the case, for example, of a man who has bought an expensive changing-box, which fits his camera. It is clear that a film is of no use to him unless it is as rigid as the glass that he is accustomed to. What is really wanted is a material as light and rigid as celluloid, vulcanite, or ebonite, while at the same time it is as transparent as glass. That such a thing is possible we have no doubt whatever. And we also doubt not that the man who produces it will become a millionaire.

+ + +

THOSE of our readers who intend to send pictures or apparatus to the Exhibition of the Photographic Society of Great Britain are reminded that the last day for remitting the same is Tuesday, September the 21st. As usual, the Exhibition will commence by a *conversazione* for members and their friends. This will take place on the evening of Saturday, October 2nd, and the Exhibition will be open to the public from the following Monday until the middle of November. We trust that exhibitors will take care that the number of portraits sent in will not be so great as is usually the case. As a rule, in these exhibitions there is a lack of variety, which can easily be corrected if every one will strive to send pictures which are a little out of the more ordinary groove of his daily work.

+ + +

WE learn from the papers that Mr. Green, of Highgate, who is a Temperance leader, lately invited the members of the Gospel-Temperance-Help-One-Another Society (what a ponderous title!) to help him to empty the contents of his wine-cellar (2,500 bottles, valued at £600) into the sewers. Now, in case other G.-T.-H.-O.-A.-S.'s people should have wine-cellars on their premises and consciences which they desire to get rid of, we hereby give notice that bottles of wine in any number may be sent to the offices of this magazine. We want to extract the alcohol from the pernicious liquid for photographic operations.

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WE have received Messrs. H. & E. J. Dale's price-list of photographic necessities. It contains eighty closely-printed pages, in which are described and illustrated all the appliances which the most exacting photographer can require.

## A KNOWLEDGE OF PHOTOGRAPHY DESIRABLE FOR ARTISTS.

BY JAMES SHIRLEY HODSON.



IMPARTIALLY to adjust rival claims among the separate individuals concerned in co-operative labour is a problem beset with difficulties, and the task is certainly not simplified when the claims to distinction are based partly upon mental and partly upon physical qualifications. The apposite story of the organ-blower's demand for equal recognition with the organist in the credit of producing the "concord of sweet sounds" is familiar to all. Although it was conceded that neither the organist nor the blower was all-powerful by himself, the parties were not agreed to the adoption of the plural phrase, "we played the organ," notwithstanding the concurrent assistance of each was necessary to the result. It would be equally difficult, even if it were necessary, in the matter of photographic reproduction to determine the relative value of the dual services rendered by artist and photographer. The only contention which it is desirable here to make is, that the best results are only to be obtained when both artist and photographer work together in harmony: the relations of the two being as intimate as they ought to be, and the work of each being essential to the satisfactory development of that of the other.

It has already been shown that it is desirable that the photographer should possess artistic knowledge, or should at least co-operate with an artist in the work of photographic reproduction. The present paper deals with the other side of the question, and it is intended to show that it is equally desirable that the artist, when preparing drawings for photographic reproduction, should have some knowledge of the fundamental principles upon which the science of photography is based. He will thus be enabled not only to select subjects which will lend themselves naturally to the capabilities of the science, but will also be able to place them in such form as will best afford facilities for reproduction.

Artists, for the most part, gladly recognise the advantages which photography affords as an escape from the risk of their designs being "improved" in the course of interpretation by an engraver; they are, however, generally careless as to the means to be employed in the preparation of their drawings when photography is the reproductive agent to be employed. Either from indifference to the subject or want of adequate knowledge, every conceivable and undesirable material has been employed, until it would be almost impossible to suggest anything new. Coarse brown



paper, with a vigorous sketch made in charcoal, the high lights supplied in body-white, is one of the remarkable forms in which drawings have been prepared for the photographer! Again, the use of a dark, orange-coloured paper, with the drawing in a pale, blue-grey ink, would be simply setting all scientific requirements at defiance, because the photographic value of the tone of the paper and of the drawing material would be nearly equal, and the design would in consequence be almost, if not entirely, lost in the negative. Some persons have gone so far as to deny the possibility of any satisfactory reproduction being made from pencil drawings, because every particle of graphite from the pencil becomes a reflector, and so interferes with the photographic image. In other words, the drawing material becomes transparent—a hard stroke of the pencil, yielding a large proportion of graphite, and thus being less transparent, while the effect of a light stroke is more transparent. “Light was transmitted,” to use the words of Captain Abney, “through the light strokes more than through the dark strokes, and therefore it was absolutely impossible by any method of block printing or lithography to reproduce a pencil drawing in correct gradations of tint.” Although the opinion thus expressed is entitled to every respectful consideration as the dictum of a scientist of weight and authority, it need not deter artists from the employment of the materials in question, even when the reproduction is intended to be submitted to photographic agency. Indeed, in opposition to this theory, the fact may be adduced that pencil drawings have been so reproduced; and when the drawings have been made with an adequate regard to the requirements of photography, successful results have been obtained. In dealing with an elaborately-finished drawing, with all the varieties of tone made in pencil alone, doubtless the difficulties above mentioned will present themselves; but it is contended that these difficulties will not prove insuperable to the skilful photographer. This is, indeed, virtually admitted by the authority already cited, who proceeds to say that such a drawing is really “a half-tint picture drawn in line, and, therefore, it could not be reproduced *so perfectly* as a pen and ink drawing.” Pencil is, however, but rarely used except in the production of sketches, as distinguished from finished pictures; and, when thus employed, the material of itself offers no impediment to reproduction by photography. At a recent meeting of the Society of Arts, upon the occasion of the reading of a paper on this subject, some very admirable specimens were exhibited by the Automatic Engraving Company as well as by the Autotype Company, in which it was extremely difficult to detect any difference between the original pencil-drawings and the reproductions.

There is also another consideration which is well worthy of attention, and that is the folly of imposing upon artists any unnecessary restrictions calculated to interfere with that “freedom of touch” which has been acquired by habit and experience; because the natural effect of cramping the artist in such a way could only be to create in his mind a disinclination to adopt photography as a reproducing medium. If an artist can work with comfort to himself in pencil, wash, or pen-and-ink, he will not find any difficulty in producing satisfactory work for the photographer; because the materials which are here recommended for his use will not be found to interfere with his previously-acquired habits.

It is desirable that a well-defined contrast should exist between the tone of the paper upon which the design is to be made and the lines forming the picture, so that a clear photographic image should result. White Bristol board of fine surface and the best Indian ink for the drawing material meet these conditions. A blue-black pigment does not form a desirable drawing medium, but the introduction of red or orange into the composition would serve to intensify the photographic image. Uniformity in colour in the drawing is also an advantage, and the artist should resist the natural tendency to express distance and to produce his effects by diminishing the intensity of colour in parts of his picture. From a drawing uniform in colour a satisfactory negative can always be obtained; but in the other case an average duration of exposure to light has to be estimated, at the risk of some portions of the picture being over-exposed, while others may be comparatively undeveloped. Many artists prefer to make their drawings upon a toned paper in preference to one absolutely white, and very charming pictures are thus produced; but for photographic reproduction white paper is preferable, and it is suggested that a toned paper may be subsequently used in printing from the negative, which would give all the effect desired.

The character of the surface of the paper selected is deserving of attention equally with that of its colour. If the surface of the paper be irregular and coarse in texture, such as painters in water-colour delight in, good photographic results suitable for book-illustration cannot be obtained: all the inequalities of the paper would be reproduced in the negative, to the manifest injury of the more delicate parts of the drawing. The shadows which are thrown by the ridges of this paper must be discharged, and this is usually done by the employment of a reflected light rather than a direct light upon the drawing before the camera.

Another and a better plan is to place the original on the floor, and either turn the camera upside



down, or to use a mirror placed at a suitable angle. So important a matter is the question of the surface of the paper for drawings, that it has been recommended by Mr. Alfred Dawson to coat the paper with an enamel, and so get rid of the surface of the paper altogether.

In preparing drawings for subsequent reproduction for book-illustration, the artist should ascertain the particular process intended to be employed, and the means adopted for multiplying reproductions. If a block be required to be produced by zincography, then the artist will adopt the line method of drawing, in which the entire picture is produced by lines, as in a line engraving. If, on the other hand, the collotype or heliotype process, or the Woodburytype or photo-gravure processes are to be employed, the drawing may be made wholly in the "wash" style, like a sepia drawing, or a water-colour in monochrome; or a combination of line and wash may be adopted.

When a wash drawing is desired to be reproduced for the purpose of mechanical printing, either by

The diagram (which is by permission reproduced from an article in the "Art Journal" of 1885) is divided into three compartments, showing the three stages of the work mentioned above. No. 1 represents the unused paper, with its series of lines; No. 2 the drawing made in pencil, with the deep shadows in Indian ink; and No. 3 the same, with the parts removed for the high lights.

It is always desirable that the artist should draw his picture to a larger scale than may be required for the resultant block; the picture will then be reduced in size in the camera, which will give an effective sharpness to the lines. A reduction of about one-fourth will generally give satisfactory results; but when using the "lined clay-paper" mentioned above, the scale of the lines will necessarily impose a limit to the scale of reduction. If reduced too much, the lines will run into each other, producing a confused mass in the shadows, detrimental to the artistic effect, and will immensely increase the difficulties of printing.



No. 1.

No. 2:

No. 3.

the typographic, the lithographic, or the copper-plate press, the various gradations of tone must be represented by lines or stipple, and methods are now in use whereby the shadows of the picture may either be granulated or produced in a network of lines.

There are some specially-prepared papers for drawing upon for photographic reproduction. These papers, it is believed, are not procurable in the open market, but are provided by the "Photo-etchers," as they call themselves, for the use of their clients. The surface of the paper is smooth, and is coated with a composition upon which a series of lines or ridges is produced. Upon this paper the artist draws his picture, and as the pencil passes over the paper a serrated line is produced, which greatly assists in the representation of the middle tones of the picture. Strong shadows may be put in with Indian ink, and to give the effect of the high lights the surface of the paper may in places be scratched away altogether.

## HOW TO AVOID SNARES AND PITFALLS IN PHOTOGRAPHY.—III.

BY DR. G. LINDSAY JOHNSON.



IN my last paper I omitted to mention one point in connection with the camera cloth, viz., that a piece of broad elastic, about 13 inches long, should be sewn at one end of the lower border of the wing of the cloth (C), with a loop at the extremity of this elastic, which, when slipped underneath the camera, close to the focussing-screen, and attached to a button sewn on the opposite flap of the cloth, will prevent the latter from shifting and blowing about in the wind.

Do not consider your glass plate safe because it is shut up inside the slide. I never saw a double (or a single) back which was *absolutely* light-proof. A good slide ought to prevent a plate from showing any trace of fog when exposed on all sides to



ordinary daylight for three or four minutes, but it is too much to expect any slide to stand the test of the full blaze of sunlight for five minutes, and then imagine that the plate will come out of the fixing-bath with its margins clear and brilliant. I have known the sun's rays to penetrate the back of a mahogany slide, and actually print the form of a piece of paper on to the gelatine surface of the plate underneath, and that when the rebates were practically safe. The point, then, to bear in mind is this : always treat your slide (however well-made it may be) as if it were the worst-built double-back ever sold, and never let the sun shine on any part of it for an instant, nor let it be exposed to open daylight a second longer than you can help. All my double-backs are protected by covers made of common grey indiarubber twill, furnished with a flap which folds over the slide when placed in

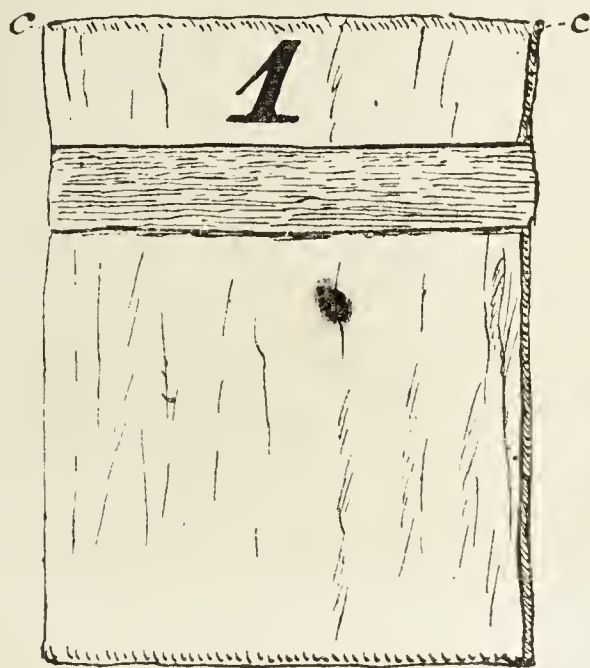


Fig. 1.

the bag, and an elastic band keeps it in its place. I have found this a most effectual method for keeping out our enemies, damp, dust, and light. How many plates are ruined (or at least have their brilliancy destroyed) through a misplaced confidence in the light-protecting power of the slides. Be on the safe side, and never consider your slide light-proof, *even when indoors*.

I remember only too well my first venture in photography; it was in Sicily, and I had unbounded faith in the integrity of my double-backs, and used to carry them about under my arm in broad daylight, without the slightest attempt to protect them; the result was that about three-fourths of the negatives were hopelessly fogged; indeed, the only ones worth printing were those which I exposed just after the sun had gone down. Of course, on my return I laid the whole blame on the "imperfect camera" and "bad quality of

the plates." As I grew wiser I learned to place the cause of failure on the right shoulders, and now I never think of taking the slide out of its case except under the camera-cloth. The two accompanying woodcuts will, I think, convey to the reader's mind what these covers should be like.

When you get them made, make sure that the following points are attended to :—

1. See that the rubber cloth used is perfectly light-proof when held up against the sun, and that there is sufficient rubber to ensure its being damp-proof.

2. Let there be two little side flaps, *a a*, Fig. 2, which you can tuck in before folding over the big flap *b*, so as to keep the light out of the corners *c c*, Fig. 1.

3. Prefer a broad elastic band (about an inch wide) to any other method for keeping the flap in its place. It is simple, and does not get out of

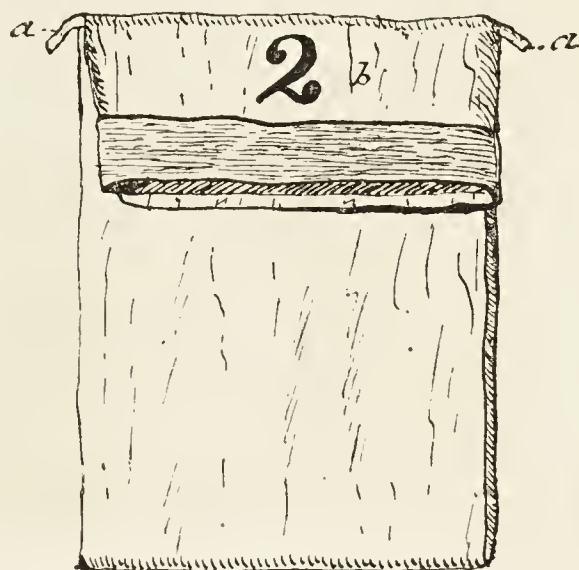


Fig. 2.

order; moreover, it lies quite flat, and is, therefore, preferable to buttons, which take time in fastening, and are apt to catch the sides of the case when withdrawing it. Paint the number of the backs, corresponding with those on the slides, in large, bold figures, otherwise you will forget what slide is inside the case. My last covers were made by Holland, 207, Edgeware-road, W.; but any india-rubber dealer would carry out the idea.

It is my invariable practice to carry my plates in a small, strong, solid leather case. This is provided with a spring lock, which opens by simply pressing a catch, but which can be further locked by a key. The above can be got at all first-class saddlers, and is most convenient, as it dispenses with straps and buckles, and in addition, it is a safety against the curiosity of servants in the hotel, and strong and secure when you may desire to forward it by post or rail. I have thus three packages (exclusive of the stand) when travel-



ling: 1. A strong leather case, containing the glass plates packed as tight as possible side by side in light-tight boxes, so as to form a solid compact mass of glass. 2. A lighter case containing camera, shutter, cloth, and lenses. 3. A dust-proof canvas satchel, which contains my double-backs in their rubber envelopes. The first of these I leave at some convenient inn while I "operate" on the neighbourhood in all directions with camera and satchel. Where many slides are needed, as in doing town views, I prefer a leather case, similar to the one holding the glass plates, and constructed to hold six or eight double-backs. If in a town, it will be found very advisable, and at times even indispensable, to avoid the appearance of a photographer, either by disguising the apparatus or chartering a carriage for the day. This may seem superfluous advice, but I assure the reader that this plan has many a time saved me from the annoyance of inquisitive officials and annoying crowds. In the country this is less important, and I then prefer to strap the camera-case on my back, like an ordinary knapsack, with a wickerwork basket-screen to keep the edges of the case clear of my shoulders, and allow for ventilation. In Alpine ascents the guide will always take the camera-case, so that there is nothing but the satchel to carry, and until real climbing begins the tripod may be advantageously used as an alpenstock, by merely lengthening out one of the legs, clamping and then securing it to the other two with the lower strap, which is generally to be found attached. (N.B.—I always keep the legs ready screwed to the head when on the march, as it saves much valuable time).

*(To be continued.)*

## A SAFE LIGHT TO WORK BY.

BY "GLOW-WORM."



When we turn to the back pages of any photographic periodical, we shall find that, since the advent of rapid gelatine plates, an immense amount of space has been devoted to solving the question, What is the best light to work by? In the old wet-plate days no such question arose—for the simple reason that the chemicals then in use were unchanged under the most brilliant of orange lights. A sheet of yellow glass was then often the sole partition between the operator in his dark room and the sunshine outside. He worked in the midst of a glory of golden light, with full security that his pictures would not suffer. Then came gelatine plates, and the revolution which they caused. The yellow glass, which enabled an operator to watch with

comfort the gradual building up of the photographic image, was at once discarded, and in its place was put the deepest ruby medium which it was possible to procure. At first this was ruby glass; then the attention of manufacturers was turned towards the subject, and the desirability of producing some material which would answer the same purpose at less cost was urged upon them. This has resulted in a variety of different media of varying tints, which are now sold under as many different fanciful names. They have mostly the appearance of the cloth used by bookbinders, and can be purchased at so much per yard.

It is certain that some of these media are not safe if used alone. Another caution to be observed in their employment is this. If used as screens for windows—and more especially if those windows have such an aspect that they get actual sunshine—the colour of the medium quickly fades. We may surmise that in the majority of cases the aniline dyes are employed in the manufacture of the material; and it is now a matter of common knowledge that such dyes, however attractive they may be at first sight, do not afford what are called "fast" colours. It would, therefore, be as well, before going to the expense and trouble of covering a large window with a screen made of any coloured medium, to test it in this way:—Expose a piece to sunlight under glass, say in an ordinary printing-frame, for several days, taking care that part of the same piece is protected from light access, so that it will afford a means of comparison. We venture to assert that after some weeks of such exposure, very few of the red fabrics now in the market will exhibit their pristine brightness. This is no matter for surprise, for there are really very few substances indeed which are not affected in some way by exposure to light. Even a piece of plain pine, if freshly planed and exposed for some days to light under an ordinary glass negative, will yield a distinct positive print. Perhaps the best precaution to observe in making a window-screen is to use the red medium, and to paste over it, on the daylight side, good thick orange paper. The paper will probably bleach to a certain extent; but this is easily remedied by a periodical brushing over with a solution of aurine in methylated alcohol.

There is far less trouble involved in getting a suitable light to work by, if we eschew daylight altogether and depend upon an artificial illuminant. For the actual *making* of plates—where, in consequence of the long time for which the chemical surface is under treatment, the risks of fogging are greatly intensified—we should always adopt some form of lamplight. But, for mere development—during which the dish in which the plate lies can be covered up and in darkness for the greater portion of the time—daylight is best. Moreover,



when the image is half developed, the chemical surface has lost much of its sensitiveness, and, therefore, at the time when examination is most needed, a goodly amount of light can be submitted to it without risk. It is obvious that a red medium, which may be quite unsafe when used as a filter for daylight, is safe enough under the far feebler rays of a lamp. But, still, it is always advisable, both in the case of daylight and lamp-light, to test the particular medium chosen. We have just given a simple test by which the permanence of its colour may be gauged. By still more simple means may we find out its suitability for photographic manipulations:—Put a sensitive plate in the dark slide just as if you were about to take a picture, and after placing the slide within six inches of the light source to be tested (placing your watch near at hand, so as to check the exposure) draw out the slide for one-third of its length, for a minute. At the end of that time draw it out another third, and give it another minute. One more exposure of the entire plate for one more minute will complete this part of the operation. We have now a plate which has received in different parts of its surface a one, two, and three minutes' exposure. If, on development, one, at least, of these three portions does not remain white, we may at once conclude that we are working by a faulty and bad light. It need not be wholly condemned, for most likely a sheet of non-actinic paper added to it will at once put matters right.

After trying various different glasses, papers, and other media, the writer has hit upon a combination—by which he has made gelatine plates of a most sensitive description—which give on development no trace of fog. The light, too, is pleasant to work by, and does not affect the eyes injuriously, as simple red light most certainly does. The light-source is a broad-wicked paraffin lamp, with an ordinary white glass chimney. On the top of the chimney is a ventilating-cap, which prevents any light finding its way heavenward. Fitting over the chimney is a wire crinoline arrangement, which is covered with a close-fitting cone of “cherry fabric.” This cone is large enough to touch the table at its base—that is to say, round the bottom of the oil-reservoir of the lamp—and to extend for four inches above the top of the chimney. As it stands, it is a most admirable light for working chloride plates by, and would, no doubt, be splendid for the old wet process. It is not, however, safe for bromide plates, but must have extra protection. This takes the form of a screen, 16 by 16 inches of green “cathedral” glass, which fits into two grooved uprights standing immediately in front of the lamp. A word about this cathedral glass. It is made in such varying tints that the buyer will

probably be puzzled which to choose. The *pale emerald* coloured glass is quite useless for the purpose advocated. It should be of the full, bright, grass-green which certain bottles exhibit.

We may point out one advantage, in addition to its general safeness, which this arrangement affords. The lamp is placed quite at the back of the working table, and close to the wall of the room. This wall is, therefore, strongly illuminated with the rich red colour of the unprotected “cherry fabric,” and sheds a reflected light, which is perfectly safe, all over the room; while the green screen in front filters all the light that is employed for actual work.

Where gas is available, it could be employed with advantage with the same screens. The mode of using it which would be most convenient would be to enclose the jet in a large lantern, somewhat of the pattern of those seen outside jewellers' shops. The white glass would be replaced by the green cathedral glass, and the whole covered in with “cherry fabric.” One important advantage in using gas is that the *amount* of light is so well under control, for the tap can be placed on the supply-pipe ready to the hand, to be turned up to the full when more light is required. It will be observed that in the case detailed, where the paraffin lamp is employed, the green glass can in a moment be lifted out of its place. In normal development this would naturally be done just before the operation is terminated, and when it is desirable to have the help of the greatest amount of light; but in practice it is really hardly necessary, except in the case of those whose eyesight is not quite what it should be. Should gas be used, it would be better for this and other reasons (such as the occasional employment of chloride plates) if means are provided for slipping the green glass out of position.

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## WITH THE CAMERA IN THE BLACK FOREST.

BY T. HEATH JOYCE.



FEW districts in Europe present such charms and facilities for the pedestrian photographer as does the Black Forest. The trip thither can easily be combined with a Rhine or Swiss tour, while for those with small purses the journey need cost but a comparatively small sum, as a first-class return ticket direct from London by the Rotterdam and Rhine steamer to Mannheim is only £2. 12s. From thence a brief railway journey leads to Strassburg and Offenburg, where the Black Forest begins. The scenery may be likened to that of inland Norway on a small scale, as there are hills



densely clad with dark pines, waterfalls innumerable, and purling streams driving busy saw-mills. In many ways, however, the photographer, especially if he be working with a small camera, will find a wider range of subjects, as the villages and houses are much more varied and picturesque than in the far North, while the costumes are some of the quaintest in Europe. The distances between the villages also are not too great for the most moderate pedestrian; the inns are particularly good, homely, and cheap; while the inhabitants, though possessing none of that servility which distinguishes mine host of the Continent, are extremely kind and hospitable. For

waterfall of the latter—to Freiburg. This route presents all the characteristics to be found in the Forest, and, moreover, is all the more interesting, as traversing one of the chief centres of the clock-making and carving industries. Thus, in Furtwangen, where the first wooden clocks were constructed, and where a halt will undoubtedly be made, the photographer will find a wealth of material in the quaint old houses and the long street, which is lighted by oil-lamps swinging in the middle—much after the fashion of London a century or so since. Nor will there be any lack of figure-subjects, from the short-petticoated *mädchen*, busily plaiting straw as she walks along, to the

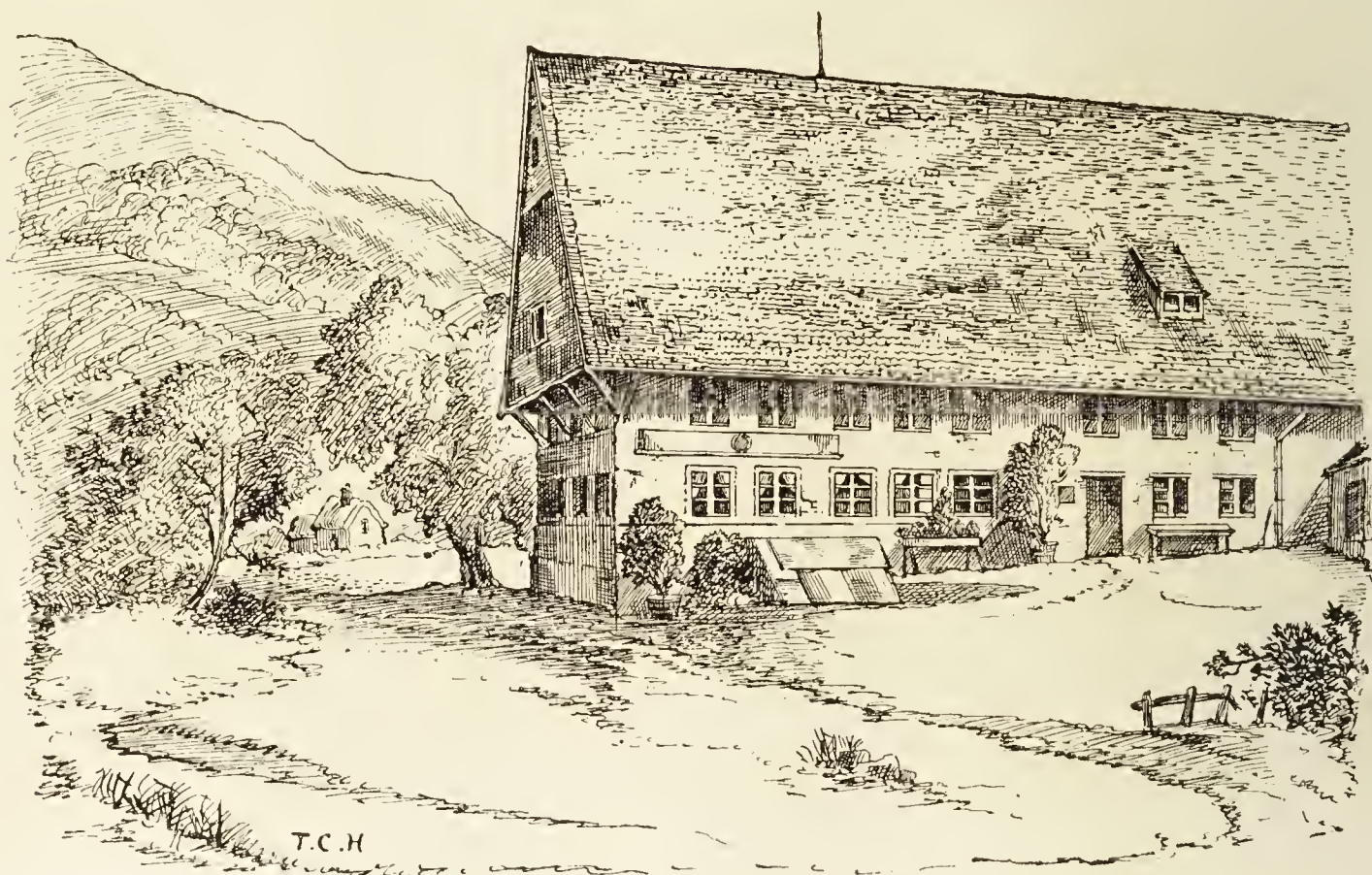


Fig. 1.—An Inn in the Simondswalderthal, Black Forest.

ladies, indeed, the Black Forest is a capital walking-ground, as the roads are carefully engineered and are beautifully kept, so that the minimum fatigue need be endured, while the more energetic spirits can take short cuts through the by-paths in the pine-woods. Those tourists who rush across the Forest by the railway know but little of the charms to be found in the villages where the train stops for a few brief moments, and yet less of the sequestered hamlets, full of busy clockmakers, with which the pedestrian will meet on his way. One of the best walks which can be done in from two to four days is from Hornberg or Triberg—where the photographer will find plenty of subjects in the quaint old street of the former, and the sevenfold

blear-eyed old pauper breaking stones by the way-side under a lean-to shed, sloped like the figure-of-four trap which boys are wont to set for unwary sparrows. I once secured a splendid shot at one of these veterans, sublime in his ugliness, and then, to my horror, found, on development, that I had taken him on a plate already impressed with a fine waterfall. Moral: Never be too eager, and note well the number of your exposed slides. Further in the Forest the cottages become yet more quaint, until, passing over the crest of the hill near Gutenbach, you descend to the valley of the wild Gutach, enjoying a series of magnificent views of torrents and waterfalls, and finally come to a richly-cultivated valley,



the Simondswalderthal, where the annexed photograph of a Black Forest inn was taken (Fig. 1.) The Black Forest folk are essentially devout, and the roadside is studded with crucifixes containing every emblem of the crucifixion, and surmounted by a cock. Every quarter of a mile or so, also, are posts containing a Madonna enclosed in a little glass chamber, all erected in testimony to some special favour received from Heaven. At Waldkirch the pedestrian should end his walk and take the train to Freiburg, where the photographer will revel in the architectural treats which the grand

Black Forest. There are plenty of trips besides those I have sketched out, and in working northward the pedestrian should endeavour to come out at Baden-Baden, if merely to take a view of the old Schloss. He will find no lack of castles, however, throughout his tour—grim old ruins, to each of which some curious legend or tale is attached. There is a well-preserved ruin at Hornberg, where I should recommend any pedestrian to commence his labours. The walk to Triberg is, indeed, particularly picturesque. The road runs by the side of a pretty stream, backed by a mass of huge dark pines,



Fig. 2.—The “Rock Maiden,” Black Forest.

old cathedral and the market-place will afford him. From Freiburg the pedestrian should make his way down through the Höllenthal, one of the wildest and grandest valleys in Europe, to Schaffhausen, or rather Neuhausen, where he should try his skill at photographing the far-famed Falls of the Rhine. As a testimony of what can be done with a small camera, I have taken a most successful view of the whole falls from the hotel window on a 5 by 4 plate. On the way, the little village of Höchenschwand should be visited, if only for the magnificent mountain panorama which is afforded, the village being the highest in the

and on the way is passed a curiously humanly-shaped cliff—the “Felsen Fräulein” (Rock Maiden), which is shown in Fig. 2, and which is well worth a plate as a natural curiosity. Though I should recommend everyone who is capable of moderate exercise to walk through the Forest, there are capital carriages to be obtained for the various trips at not exorbitant prices, while there is a very well-organised system of diligences at a state-regulated tariff, and of these the pedestrian will frequently be glad to avail himself. The inns are particularly clean and in every way inexpensive. There is no pauperism in the Forest—abso-



lutely no beggars, for the Schwarzwald, as we have said, is particularly independent, and in no way expects a tip for every little service which he may have to render, being in this way far different from his grasping neighbour, the Switzer. Thus the photographer will find no difficulty in obtaining, that, to him, the first of all necessities, plenty of water, as the sturdy-limbed Abigail will be only too pleased to bring him any number of pails, and be highly delighted if he ask her to stand as a model at the door of the inn, or in the foreground of some striking view. Considering how Switzerland and other adjoining tourist resorts have been photographed, almost *ad nauseam*, it is surprising that such an eminently picturesque corner of Europe as the Black Forest should so long have been left unvisited by the Knights of the Sun.

## TABLES OF EXPOSURE.

BY JOSEPH HARRIS.



IN these days it is becoming too much the fashion to attempt to systematize everything. There is a universal desire, consequent upon our high-pressure state of existence, to save as much trouble as possible in all our undertakings, whether business or pleasure, trusting that the "system" in which we may happen to place our faith will bring us out happily in the end.

We have our "system" for out-door relief—a grand institution for a Christian country. There is the "sweating system;" the "system" for operating in stocks and shares, without the possibility of loss; and now we are blessed with still another system—a photographic system this time, by means of which the tyro has only to refer to a table, and he at once sees the approximate exposure he must give to his plates.

Shades of the immortal Nine! what mystery is written in the name of art—and science! And the mystery resolves itself into unmitigated confusion when the photographic novice resorts to his "tables," in the earnest hope and belief that he will thereby be enabled to give a more correct exposure than without such tabulated aids to pictorial effect.

There is a passage for a cultured, an artistic mind! Pictorial effect reduced to a system of tables! Is it desired to paint the "landscape with *heaving* foliage in the foreground?" Where are the "tables?" Why is the wit of man thus dormant. The question of the hour is *how much paint shall be taken?*

This attempt to reduce the art of photography to another "system," to cut down to a set of hard and dried rules that teaching which experience

alone can give; this attempt cannot be too strongly denounced in the interest of those who are willing to learn, in the interest of those who require to be taught, and who are the most likely to be misled by their self-constituted instructors.

It has been written in extenuation of the so-called theory of systematic exposure that in bygone years there was no clue to the timing of the plate, nothing but the "monotonous statement" that "exposure was entirely a matter of experience."

The practical man, as distinguished from the mere theorist, will readily endorse this "monotonous statement." There is *no* rule, there is no table which can be compiled, or which has been compiled, which shall be of the slightest assistance to the novice on the exposure to be given to different classes of subjects, beyond the very general information that a brightly-lighted picture will require less time than a dimly-lighted one; but before this difference of time can be tabulated to be of the slightest service to any one, it will be advisable to record the number of grains of salt which should be eaten with an egg. And as allowance must be made for the age of the egg and the taste of its masticator, so must be taken into consideration the *depth* of shadow desired in the "open landscape," or the amount of detail "under the trees" which will best harmonise with the particular composition. To day, and the cathedral porch may be taken in five seconds; to morrow it might require ten, and the next day fifteen, and the day after, two and a-half will suffice, so much depends on the actinic power of the light, and the strength of this actinism can only be judged by long experience, *by the education of the eye through the brain*. Practice is the only monitor—there is no royal guide nor royal system whereby proficiency can be attained in any art—even that of photography. Without pressing advantage unduly home, reference might be made to an assertion in print that "experienced photographers often have a difficulty in realising that, taken all round, the exposures within buildings are about a thousand times those required without." The photographer must be an extraordinarily experienced man to realise the truth of *that* piece of "systematic" information. Five seconds for the exterior of our old village church, and *one hour twenty minutes* for the interior? No, no, the tables must be mixed this time, unless this particular church or particular interior requiring this thousand-fold exposure happens to be built underground—or, worse still, to be located in *Anticyra*. And these tables are supposed to meet ordinary, not extraordinary, cases. He who would succeed in the exposure of his plates, must make up his mind to court failure in the first instance. He must train his eye to judge the illuminating



power of the light under different atmospheric conditions, and as the painter varies his tints to portray sunshine and shadow, without any guide beyond the mighty one of experience, so must the photographer be content to walk the same path, and, as he works in monochrome instead of many colours, learn, firstly, how much shadow is requisite to secure the effect he desires in his picture; secondly, the amount of exposure necessary to produce that depth of shade.

## ON RETOUCHING.

BY THE EDITOR.



RETOUCHING may be defined as the art of working upon a photographic negative with a lead pencil, in order to improve its printing qualities. There are many who condemn the system altogether, and who complain that it sacrifices truth. There are many more who advocate it, and constantly employ the process as a matter of course. The following remarks are intended more especially for beginners, but deal with these rival opinions. At the same time, the art of retouching is explained, and the various operations connected with it described.

The question naturally presents itself, What amount of retouching is legitimate? Let us first answer this query by pointing out what is not legitimate. A lady of a certain age lately showed me a picture which she had sat for in a continental city. She described it as the only really good photograph which had been ever taken of her, and made the stereotyped remarks, "I am so difficult to take, don't you know," and "The weather is so much clearer over there," &c. I examined the portrait. It was a triumph of retouching. The marks of age had disappeared; not a crow had planted his hated foot on that fair temple. The skin was like that of a little child. The worthy matron had had the tell-tale hands of Nature's timepiece put back fifteen years. I returned the picture with the remark that it was most cleverly done, and I meant what I said.

On thinking over this matter, I felt rather disgusted with the photographer in question, and all his works, although I had criticised but one of them. But, on the *audi alteram partem* principle, I thought that I would mention the case to a professional photographer of my acquaintance, to learn his opinion concerning it. He said that from an artist's point of view such flattery was, of course, wrong; even morally it might be wrong. But still photographers must live, and their life is much easier if a little judicious manipulation of certain negatives is allowed. Now here, said he, is a negative from which this specimen print has just

been taken. It is of a stout lady, as you see, who has arrayed herself in a dress having vertical stripes, alternately black and white, each about one inch in breadth. Now, if you count the number of stripes across the waist, you will find them amount to eighteen; the lady's diameter is therefore eighteen inches. But, as three diameters make one circumference, what we may call the "grasp" of her form is somewhat excessive. Now, if I send this portrait in for the lady's approval as it is, she will most wrathfully reject it. I cannot afford to have the picture thrown upon my hands; so now to obviate the difficulty. "John," he called out, "tell Mr. — to take three stripes out of each side of this waist."

"Is this sort of thing often done?" said I.

"Not very often," was the reply. "This was an extreme case. Now, we had another sitter the other day, who actually forced us to manipulate his picture. He was a youth about eighteen years of age, and a veritable masher. His collar was abnormally high, and his forehead was abnormally low. He had had his picture taken the previous week, and had called, according to arrangement, to examine the proof copy. After carefully looking at the picture, he said, 'Er, there is, er—some er—little mistake here, I think.' 'Indeed, sir,' said my assistant; 'in what respect do you mean?' The reply was startling. 'Well, you see, the picture does not show my moustache.' My assistant luckily kept his countenance, and he must have had some little difficulty in doing so, for the poor boy's lip was as yet quite devoid of any sign of manhood; but he was equal to the occasion, and agreed with the masher that some mistake had evidently been made. Would he call again in two days' time? The negative was immediately put into the hands of the aforesaid Mr. —, who speedily invested it with a fine moustache. The original kept his appointment, approved of the picture, and ordered six dozen copies." I wished my professional friend good-day, and as I left his atelier I could not help thinking of the sublime truth of that adage about brains and money which was formulated some years ago by an unfortunate nobleman, who was shortly afterwards languishing at Dartmoor.

It is clear that the practices described cannot be considered legitimate, although they are countenanced, as adulteration in other branches of commerce is countenanced, in the fight for life, and in the struggle against competing rivals. Let us now see how far retouching can be conscientiously employed as an improving agent. Our aim should be to represent the truth; but this, in many instances, is most difficult of attainment. Take, for example, the case of a man with reddish hair, with beard, moustache, and whiskers to match. His photograph will show this hair—and



his face is nearly all hair—as black as the cloth of his coat, in hard contrast to his white skin, and persons with hair of that colour have generally very white skins. Such a likeness cannot be called a truthful one; and if we can by a few delicate touches reduce the blackness, we are surely doing legitimate work. The preferable plan would, perhaps, be to induce the sitter to apply a liberal sprinkling of violet powder to the offending hair before the lens is uncapped.

The camera has been aptly called “the retina which never forgets.” But this saying might be capped by another with quite as much truth in it, thus:—“The camera is a retina which never forgets to exaggerate.” What I mean is this: If a sitter be gifted by nature with a nasal organ of liberal dimensions, the camera depicts it as a veritable proboscis. Again, a healthy person, whose ruddy cheek proclaims his independence of medicine, is sometimes transformed by the photographer into a consumptive-looking being, with dark lines under the eyes, ditto, ditto, at the corners of the nostrils, and the same at the corners of the mouth. A pretty freckled lass is pretty no longer. She is covered with black spots, which are far more pronounced in their character than the freckles to which they owe their origin.

But there are innumerable markings upon the face which, quite invisible to the eye, become strongly marked upon the negative. The extent to which this betrayal of invisible marks is possible can hardly be credited. One case has just come under my own notice, and I can therefore vouch for its truth. A fortnight ago one of my little ones, who will presently reach the mature age of two years, was trotting about that arena which, for want of a better term, Londoners call “the garden.” The little fellow looked so well and jolly that I put him in a chair, brought out my camera, and took his portrait (drop-shutter exposure). On developing the picture, I found the face covered with transparent spots. This I paid no particular heed to at the time, for the portrait in other respects was not a good one, and therefore I did not value it; but I happened to keep the negative.

Two days after this, I was far away in Devonshire, and on the second day of my visit there—four days after the portrait was taken—I received the news that the little boy was covered with an eruption from head to foot, due to “prickly heat,” the doctor said.

*The camera had seen and photographed the eruption three days before it was visible to the eye.* I have since taken a print from the negative, in order to eliminate any chance of error in this matter, and I feel quite certain that the spots are due to the cause named. Our contributor, Mr. Brooks, told me of a somewhat similar case which occurred to him. He photographed a child whose face was

clear enough, but whose image on the negative was covered with spots. (This was in the old days of wet plates, when pinholes and spots from mechanical sources were far more prevalent than they are now.) Mr. Brooks took two or three negatives in order to correct the fault, when he noticed that the spots on each were exactly the same. He dismissed his sitter in despair, and learnt a fortnight afterwards that the child had suddenly sickened for the smallpox.

I fear that these accounts, however interesting they may be from a medical point of view (they may possibly point to a new method of diagnosis), may be looked upon as a wide digression from the subject before us; but, at any rate, they will serve to show that the camera is apt to reveal more than the eye can appreciate. We are therefore justified, I think, in acknowledging that retouching is per-

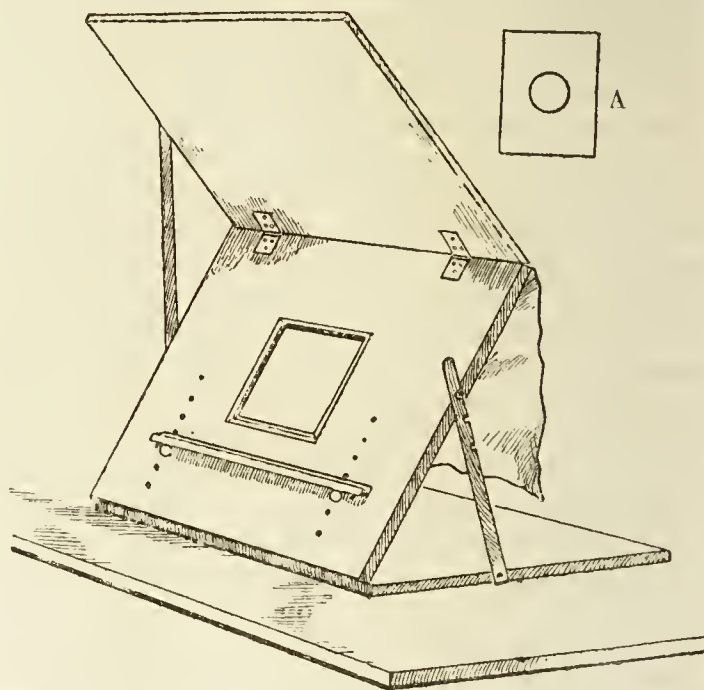


Fig. 1.—A Retouching Desk.

missible, if it be confined to eliminating these foreign marks, and to softening and reducing any other marks which are exaggerated. We will now point out how the Ethiopian can, to a certain extent, have his skin changed, and the leopard his spots.

The tools required for retouching are simple and few in number. A proper desk for the purpose can be bought ready-made, or can be made at home by those with cunning hands. Here is a sketch of a desk which should present very little difficulty to the amateur carpenter. It consists essentially of three boards, measuring about 15 by 18 inches, hinged together at their edges in the manner shown. The lower board rests on the table. The middle board is the desk proper, and is raised from the lower board by attached struts, while the uppermost board



depends in like manner upon the middle one, and serves as a kind of sky-shade for the eyes, for the apparatus is generally used close to a window. The middle board or desk has in its centre a square hole furnished with a rebate all round like a picture-frame; and in this opening two or three independent pieces of wood, each with a centre-bit hole of different size in the middle, can be fitted. Behind this opening is fixed, in any convenient way, a piece of finely-ground glass. The middle board in other respects may be likened to an artist's easel. It has a row of holes on each side, and two pegs fitting into any pair of these holes support a ledge of wood upon which the negative to be operated upon rests. A curtain of white tissue-paper, hanging from the hinged joint between the upper and middle boards, softens the light and renders the work easier.

If the desk be used in daylight, a sheet of white cardboard is laid on the horizontal board on the table, so as to reflect the light from the sky through the negative. If the image be an unusually dense one, a looking-glass will serve the same purpose better; but, possibly, these details are best modified by the operator himself, for individual eyes differ in their amount of sensitiveness to light. At night—which is the time which many of necessity must devote to the work—a good paraffin lamp is, perhaps, the best form of illuminant, and its yellow tinge can be corrected by a curtain of *blue* tissue paper in lieu of the white one ordinarily used.

In addition to the desk the requirements are:—

- A bottle of retouching medium,
- A pencil-holder and various leads,
- And a sheet of fine glass-paper.

The medium is sold at all photographic warehouses, and directions for its application are usually printed on the label of the bottle. The negative should have been varnished, and the medium gives that varnish a roughness, or tooth, so that the pencil will mark upon it. The same result can be brought about, not so perfectly, by rubbing the face and parts to be worked upon with a finger which has been dipped into finely-powdered resin or pumice-powder. But it is less risky to use a proper medium. Generally a small drop is put on a corner of the handkerchief, or upon the finger, and is rubbed on to the part required in a circular direction, until all trace of liquid evaporates.

Faber's pencil-holder is a convenient kind to employ, and of the leads to fit it those numbered three and four are the most suitable for retouching. The lead must be cut to a fine, long point, and can be kept in condition by an occasional rub on the glass-paper, with a finishing touch on rough drawing-paper. Let us now, in imagination, com-

mence work upon a negative—say that of a female face.

The square opening in the desk is, to begin with, left free, and the negative laid upon it, so that we can get a general idea of its appearance, with a view to spying out defects. After which we can insert one of the little independent squares (A), which happens to be pierced with a round opening of about the size of the face we are about to work upon. All being ready, we commence work upon the forehead. We at once see that the flesh is full of defects, represented on the negative by light, irregular markings. These are quite different to natural wrinkles and depressions, to which we shall presently give attention. They come under the head of those invisible discolorations to which I have already adverted. Commencing with one of these patches, we gradually fill it in by fine strokes of the pencil, working at the same time round about it so that our pencil-marks are blended with the photographic surface. The chief difficulty which the tyro finds with the work is, that he cannot see his own pencil-marks, as he can when working on paper. But he sees their effect, for the light patches which he is trying to conceal gradually disappear.

Where the forehead joins the nose is the headquarters of the freckle army—if there be any of that troublesome corps present. These are obliterated in the same way, working from each freckle as a centre, and shading off the edges gradually. With regard to the nose, the line of light down its side may generally be strengthened with advantage by one or two careful strokes boldly but lightly drawn. The line should be carried not quite to the tip of the nose, where another independent touch or two will complete that part of the work. The cheeks and chin may now be worked upon as the forehead has been. The eyes must not be touched. The wrinkles on old faces often constitute their own beauty, and should by no means be interfered with, but when, from that faculty of exaggeration which the camera possesses, the face lines, such as those beneath the eyes, nose, and mouth, are unduly prominent in young and middle-aged people, the fault must be corrected. Here, again, we must work with lines parallel with the markings which we wish to soften. A few touches will suffice to make a very great difference. The worker will find great advantage in having before him as he works a print from the untouched negative; he will then see where his skill is most required. Even if he should go wrong, a drop of turpentine on a piece of wash-leather will remove the pencil-marks at once, and he can then commence his work once more.

*Spotting-out* is the term applied to the work of eradicating any unseemly markings on the paper prints. This is done after the pictures are mounted.



The markings may be due to defective paper, air-bells, and so on; and generally take the form of minute dots, which the touch of a finely-pointed brush will get rid of. Ordinary water colours are used for the purpose, but they should be mixed with gum-water, so that the corrections shall not appear as dull spots on the shiny albumenised surface of the prints. The most useful colours to employ are Prussian blue, sepia, Indian ink, and crimson lake. With these, blended in different proportions, the tone of any print can be readily matched.

## NOTES FOR BEGINNERS.—II.

BY HOWARD FARMER.



WE will take first a general landscape out of doors. Before putting up the camera, spend a little time in viewing the scene from various available points which appear suitable, in order to obtain the best composition and lighting. For this purpose a small instrument, known as a view-meter, may with advantage be employed. It consists of a piece of metal having a small aperture fixed vertically upon a bar, which latter carries a light metal frame, whose sides include a rectangle having the same proportions as the sensitive plates used; the frame is fixed at such a distance from the small aperture that, on looking with one eye closed through the aperture and metal frame, exactly the same amount and proportion of subject is seen as is formed on the sensitive plate by the lens. For use with different lenses having different focal lengths or with other sized plates the frame is made to slide upon the supporting bar, and is fixed at its proper distance for each lens, &c. A rough-and-ready substitute for the view-meter may be made by cutting a rectangular aperture in a piece of card, about the size of a post-card, and holding it at such a distance from the eye (as ascertained by previous trial) that the same amount of subject will be seen as is formed by the lens on a plate.

Having decided upon the point of view, put up the stand and camera, screw in the lens, and, using the largest stop the lens is made to work with, rack out the camera so as to get the image on the ground glass roughly sharp; then bring the head a little back so as to get a general view of the image, and if there appears a little too much or too little of the subject on either side of the image, turn the camera round on the stand, or preferably on the front support, until the desired proportions are obtained; also tilt the camera upwards or downwards to adjust the proportions of sky and foreground (the front of the camera carrying the lens may, if desired, be raised or lowered for the purpose of giving more or less sky or foreground; but

with landscape, tilting the camera up or down is usually the proper method). Having now made a general adjustment, fix the eyes upon some prominent object in the view, proceed to make it as sharp as possible, still using the full aperture of the lens. This is best done by turning the focussing-rack first in one and then in the other direction, so that the object which is being focussed is, in both cases, rendered a little out of focus, and then halving the movement of the rack (there is no law as to which portion of a view should be focussed first with the rack, but in the great majority of subjects it may be taken as the *nearest object of importance in the picture*). The one object being sharp, carefully scan all the other portions of the image, and if any of them are not sufficiently sharp they can be rendered so by reducing the aperture of the lens—*i.e.*, putting in a sufficiently small stop; if rapidity of exposure is not of importance, the focussing may then be taken as finished; but when the view contains objects, such as cattle, water, &c., moving, or likely to move, it must be remembered that the smaller the stop used in the lens the longer the exposure required; hence, it is sometimes desirable to reduce the aperture of the lens as little as possible. In such cases, either the horizontal or vertical swing of the camera-back, or both, frequently assists the focussing. Take, for example, any subject which is situated obliquely in front of the camera—*i.e.*, so that one side is nearer than the other. On focussing the near side with the full aperture of the lens, if the other and more distant side is out of focus, as will probably be the case, it may be rendered sharp by pushing the side of the ground glass on which its image falls nearer the lens. It does not even require that the view should be an oblique one for the movement to be useful. Suppose you have some friends sitting on a lawn on one side of the picture, and a house further away on the other side, all the rest of the view consisting of foliage and ground. In focussing, both the figures and house would be obtained sharp with open aperture by the aid of the swing-back, and then it would not matter if the foliage, &c., were not microscopically sharp—in fact, it would be an advantage. In most cases where objects at different distances are included in a view, it is wise not to make the distance quite sharp, but to leave it a little indistinct; such an appearance adds greatly to the effect of relief and distance. Take, again, a hill-side with a tumbling rivulet. Without the aid of the swing-back it would be well-nigh impossible to get a sharp image, and at the same time get the falling water well represented. Similarly, cases will readily occur where both swing movements will be useful in assisting to form sharp images with



large apertures. In all cases, after using either or both swings, get the image as sharp as possible with the open aperture, and then, if not sufficiently sharp, insert a stop.

To recapitulate the operations of focussing a landscape :—

1. Choose point of view.
2. Set up camera and roughly focus.
3. Adjust lateral proportions, sky and foreground.
4. Focus sharply with full aperture near object of importance.
5. Assist focussing with swing-back.
6. Insert stop, if necessary.

## DEVELOPMENT WITH WASHING SODA.

BY THE EDITOR.



HERE is no doubt that the favourite alkali in use for the development of gelatine plates is ammonia. It has of late years been displaced, to some extent, particularly among amateurs, by potash, chiefly because Mr. Beach,

of New York, has published a very good developer—which is now universally known as Beach's developer—in which carbonate of potash forms one of the ingredients. But still ammonia holds its own. Makers of plates are, no doubt, partly responsible for this, for with every box of plates issued the printed directions for developing them point to ammonia as the sheet-anchor.

Critically examined, the liquid ammonia generally used has several disadvantages, not the least of which is its very volatile nature. It may be truly said that a bottle of ammonia once unstopped is no longer of its pristine strength, and that every occasion upon which its stopper is afterwards removed contributes to its gradual weakening. In reality, it is simply water saturated with ammonia-gas, and this gas is continually escaping from it on every opportunity, as the nose and eyes of the operator can very well testify.

Another disadvantage in the use of ammonia is its effect upon the human system. Passing by its irritating and choking effects when accidentally inhaled, which every user experiences, its action on some people is far more distressing. We know of two cases of temporary deafness which lasted for several months, which were attributed to the constant inhalation of ammonia during certain photographic operations, and the diagnosis was justified to some extent by the circumstance that when the use of ammonia was discarded the unpleasant symptoms gradually disappeared.

But some will exclaim: "If I cannot use ammonia, what am I to do? I have tried ferrous-oxalate, and find it wanting in many of the

qualities which I prize, and which I can easily get with ammonia. What is to take its place? The answer to this question is easy. In place of volatile, uncertain ammonia, the strength of which varies so much, use that humble salt which is found in every household, and which is called *soda*. Washing soda is really the carbonate of soda, although in common parlance that title is erroneously applied to the *bi*-carbonate. It is different from ammonia in being a fixed alkali; so that if we form it into a solution with water, and even leave it unstopped for weeks together, it will not change its strength, except that it may be rendered a little stronger by evaporation of the water. The best way to use it is to mix up at least half a gallon of solution at a time. In a stone or glass bottle of that capacity put three-quarters of a pound of the powdered crystals. Fill up the bottle with hot water, and add thirty-six grains of bromide of potassium. The bottle should be inverted once or twice to facilitate the dissolution of the crystals, and when cold the mixture will be ready for use. This must be regarded as a stock solution, and represents enough to develop many dozens of whole plates.

When a stock of plates is to be developed, it is best to pour out in a small jug a few ounces of the soda solution, so as to have it conveniently at hand. A bottle of dry pyro (or, if preferred, a solution of known strength) is placed also within easy reach. For developing a whole plate, a small spoonful of dry pyro is placed in the developing-glass or cup, together with six ounces of water. To this is added one drachm of the soda solution, and the whole is thrown upon the plate. If the exposure of the plate has been correct, the image will appear in a few seconds, and development will be complete in about three minutes. The plate will seldom want any more soda solution than the quantity just quoted; but in case there should seem to be a little lack of density, a double or treble quantity can be used without any risk of fog, as in the case of ammonia.

It will be found sometimes—and generally, if the development be at all forced—that the image is of a very yellow tone. This is by no means objectionable as a rule; indeed, in some cases of thin negatives, it is a great advantage. But when the image is very dense and yellow at the same time, the negative will not only be difficult to print from, but will generally yield very hard pictures. When this is the case, the yellowness of the negative can be eliminated in a few seconds by immersion in the following clearing bath, which should be freshly prepared.

Citric acid .....	$\frac{1}{2}$ oz.
Alum .....	$\frac{1}{2}$ "
Protosulphate of iron .....	3 "
Water .....	10 "



After treatment with this bath, the yellow image will be changed to a pearly grey, very like that afforded by ferrous-oxalate development. Much the same effect can be produced by immersion in a simple solution (one in eighty) of sulphuric-acid and water. But some brands of plates will not stand any contact with acid without showing signs that their films are thinking of parting company with the glass. I therefore recommend the clearing solution just given. I am certain that most persons who may be induced to try this method of development will prefer it to the usual ammonia formula.

### OUR FULL-PAGE ILLUSTRATION.



PHOTOGRAPHY is well to the front with automatic processes of illustration, and is performing a great deal of work which would otherwise have to be done by the draughtsman and engraver. We do not know that these two branches of artistic employment suffer as much as might have been expected by reason of the competition of photographic processes, because cheaper methods introduced illustrations into our literature which could not otherwise be afforded. Much excellent work is now being done in the way of blocks for printing with type. But there is another class of illustration which, being printed from the flat surface of stone, better preserves the delicacy of those lines and dots lying next the clear spaces. These are often very troublesome in printing from raised surfaces, but afford no difficulty in lithography.

The illustration we offer our readers this month is an example of a process which has been recently elaborated, and is now introduced to public notice under the name of the "Photograde Process." We are not at liberty at present to divulge the mode of working, but our readers will see that while it resembles certain processes which have been before the public for some time, its granulation is somewhat different. We think its merits will command for it a wide field of usefulness.

WE have recently had an opportunity of inspecting the series of dark rooms which have been built at 108, Regent-street, by the London Stereoscopic and Photographic Company (Limited) for the accommodation of amateurs. These rooms are fitted with every modern appliance, and, if only on that account, are well worthy of a visit; for they show how much can be done in the way of convenient arrangement in a limited space. The rooms are free to all, and those who wish to use them need be under no apprehension that they must buy something as a *quid pro quo*.

### NOTES FROM GERMANY.

BY W. E. WOODBURY.

Düsseldorf, July 20.



ALTHOUGH Germany manufactures most of the pyrogallic acid used in the world, it is not generally employed by German photographers, who prefer oxalate of iron as a developer, the proportions being: Oxalate of potash, 4 parts; iron, 1 part. Stolze's potassium developer has also found great favour among many, the following being the best formula, as published by Dr. J. M. Eder, of Vienna:—

A. Neutral sulphite of soda .....	25 grammes.
Pyrogallic acid.....	10 „
Sulphuric acid.. ..	3 to 8 drops.
Water .....	100 cc.
B. Pure carbonate of potassium...	90 grammes.
Neutral sulphite of soda .....	25 „
Water .....	200 cc.

Before using, mix 100cc. water with 3cc. of A and 3cc. of B. By an increased addition of water the pictures will be found to develop much softer. As a restrainer for over-exposures, citrate or bromide of potassium can be added.

Apropos of developers, many advocates of hydroxylamine as a developing agent, but who have been prevented from using it, in consequence of its costliness, will be glad to hear of a new and cheaper process of manufacturing this article recently discovered by the eminent photographic chemist, Dr. J. Schnauss, and published by him in the *Photographisches Archiv*. By this process the cost is reduced from thirty shillings per hundred grammes to seven shillings and sixpence.

In place of albumen paper, gelatino and collodio chloride of silver papers are being now largely used among the principal photographers. Experiments are daily being made, many papers being already in the market. Foremost among these is a gelatino-chloride of silver paper, manufactured by Dr. Liesegang, of Düsseldorf, to which the name of Aristo-Paper is given. With this paper every detail of the negative is reproduced in the finished print. The printing is about three times as quick as ordinary albumen paper, and the manipulation quite as easy.

Dr. P. Salcher and S. Riegler have been repeating some experiments made some time ago by Prof. Mach of photographing a shot discharged from a musket. These gentlemen, however, used larger projectiles, moving at a greater rapidity. With shot of 11 mm. diameter, travelling at a speed of 440 mètres per second, exceedingly sharp and detailed negatives were obtained.

Orthochromatic or isochromatic photography—that is, the photography of coloured objects in





COTTAGES NEAR EXMOUTH.







their proper relative tones—has been occupying the attention of many learned professors. Altout and Clayton, in France, are said to be the first who introduced dry plates coloured with eosine for the production of coloured objects. Vogel's azalin plates and Eder's orthochromatic plates followed soon after. Schumann, and afterwards Vogel, discovered that pictures in their true relative tones could be produced upon these orthochromatic plates by lamp-light, thereby dispensing with the yellow-coloured glass which had previously to be placed in front of the object. Successful portraits were recently made by a photographing firm in Vienna upon erythrosin plates by kerosene oil light of about 300 candles. Notwithstanding the small amount of illumination, the exposure given was only from three to six seconds.

Unlike England, the pleasures of amateur photography are not experienced by many in this country. The following letter was a few days ago received by a firm from an amateur who had just bought a set of apparatus:—"Gentlemen,—The apparatus you sent was received all right. I regret, however, to state that a mistake has been made in the fitting-up of the camera. The part where the screw of the tripod-stand fits into has been placed at the top instead of at the bottom of the camera, and, of course, the view on the ground-glass appears upside-down. I have sent it per rail, trusting you will kindly make the necessary alterations."

## A NEW METHOD OF OBTAINING ENLARGED NEGATIVES.

BY THE EDITOR.



FEW weeks ago I had occasion to obtain from some half-plate negatives some copies of them on plates measuring 16 by 13. The problem I put to myself was this—which is the quickest and best way of accomplishing the work? After some consideration I determined to work with the lime-light, for the weather was dull and uncertain at the time I am speaking of, and I thought that I would at once eliminate one common source of error by adopting a mode of illumination which represents a constant quantity. This being settled, I next thought over the different systems of enlarging, and finally decided to try a new plan.

I am so constantly using the lime-light for lecture purposes, that a residue bag of oxygen is always at hand, ready for any home experiment that I like to try; otherwise, I should, perhaps, have decided to carry out my plan with some other illuminant. Fitting a blow-through

lens jet to an experimental lantern with a 4-inch condenser, and with a quarter-plate portrait lens as the objective, my optical arrangements were complete. But a 4-inch condenser is clearly useless for projecting the image of a negative of nearly double its area. My first operation was, therefore, to make some small positives on glass from the negatives. This was easily done by fitting the negatives into my copying apparatus, and using a quarter-plate camera. The size of the resulting positives was just two inches across; smaller, it may be thought, than was absolutely necessary. But, by this plan, I employed the best part of the projecting lens, and there was no chance of any falling-off in sharpness at the margin of the pictures.

The small positives were made with very great care, the exposure and development being so controlled that the resulting pictures were somewhat denser than would be advisable for an ordinary lantern-slide. They exhibited in miniature every detail to be found in the negatives to which they owed their origin; and, in more than one case, an improvement was effected in the process of reduction, for some of the negatives were yellowed in certain portions, and would, therefore, print unequally. This was obviated by shading during exposure.

The positives, although measuring only two inches across, were taken for convenience on the standard plates for lantern pictures— $3\frac{1}{4}$  by  $3\frac{1}{4}$ —so that a broad margin of clear glass remained all round them. This was covered with black varnish, after which the glasses were fitted into the usual grooved carriers employed in lantern work.

The next thing was to arrange a proper focusing-screen for the reception of the image. This took the form of a sheet of glass, 16 by 13, covered on one side with white paper. Temporary wooden clips, fastened to the wall at a convenient height from the ground, held this papered glass in position, and in such a way that it could be readily removed and a sensitive plate put in its place.

It is with regard to the sensitive plates used that I must now speak. I found that commercial plates of the size required, 16 by 13, were very expensive; if I remember rightly, something like £2 per dozen was the price quoted to me. This was more than I cared to expend on mere experimental work—besides which, it goes against the grain to buy plates when one has been in the habit for years of making them of unsurpassed quality. I now bethought me that I had put away somewhere a jar of chloride emulsion, which I had made some months before, and had left neglected for want of opportunity to make plates from it. Why should I not make some 16 by 13 plates with this chloride emulsion? thought I. The thing was no sooner thought of than put in practice, and that night the plates were coated



and racked, to the number of eighteen. I also was careful at the same time to cover a few quarter-plates, with which I could make trial exposures.

There is one great advantage in manipulating chloride emulsion and the plates made from it : it is so insensitive—about 100 times less so than bromide plates—that the brightest of yellow lights can be used without affecting it. I use a brilliant paraffin lamp, surrounded by a wire fence, and this is covered with a screen of yellow oiled paper. The light given is so great that a book can easily be read at the further end of the room, and my coating-room is quite a large one.

Two days later I was ready for work, and had the lantern adjusted at the right distance from my focussing-screen on the wall to give an image of the required size. Carefully focussing the first picture, I took one of the little trial-plates, and held it against the focussing-screen for one minute. Upon development it showed under-exposure. One or two more trials resulted in my finding that the correct exposure was ninety-five seconds. I now felt some confidence in dealing with the larger plates, and I exposed three, one after the other.

Now came the development. I mixed, first of all, one pint of developer from my stock solutions, and this I put in a jug. The first plate was put in a dish, and the whole jugful swished over it. The image flashed out at once. This is always the case with my chloride plates, so that it did not surprise me. Keeping the developer moving over the plate, I lifted up the glass at intervals so as to watch its progress. In about four minutes it had attained sufficient density. I then emptied the developer back into the jug, for I knew it would serve for several plates in succession. The negative in the dish was now thoroughly washed with about a gallon of water, and transferred to the fixing-bath. The remaining plates were then treated in exactly the same way, and without a single failure.

There was at first some difficulty in thoroughly washing such large plates, but I solved it by making use of the bath-room. The bath was filled with water, and the plates were placed along the sides, film-side down. In less than an hour they were thoroughly freed of the fixing salt.

These negatives were all that could be desired. Some of them were purposely reversed for printing by the carbon process, this reversal being brought about by the simple expedient of causing the film-side of the little positive to face the light in the lantern. Their perfection of detail may be gauged by the following : In one case the little positive had become rather dusty previous to exposure, and I took it out of the lantern, and rubbed its varnished surface with my handkerchief. This caused

some tiny scratches upon it, which were at the time quite unnoticed ; but the scratches were clearly visible on the enlarged negatives. They were, certainly, not thicker than the finest spider's web—but still, there they were.

## ON PHOTOGRAPHING INTERIORS.

BY VALENTINE BLANCHARD.



Y last paper was mainly devoted to the best method of producing portraits at home, with as much as possible the ordinary effects of light and shade usually produced in the studio. Now, there is an undoubtedly large variety of subjects made possible by the extreme rapidity of modern dry-plates, which, in the days of wet collodion, were almost beyond the range of probability. Among these may be named interiors with figures. Occasionally in the past, it is true, successful results have been secured under extremely favourable circumstances, and a charming little picture by Mr. H. P. Robinson is at this moment fresh in my memory, though it was produced quite twenty years ago. The subject was a simple home scene—a fireside appropriately furnished by a naturally-posed figure of a lady, with the feet on the fender, enjoying the genial warmth from a briskly-burning fire. Though taken by daylight, there was sufficient actinic effect in the flame and smoke to give life to the fireplace. The whole scene was most effective.

Now, a home interior without a figure to gladden it is even more lifeless than a landscape without figures ; and, naturally, many people, particularly ladies, desire to have photographs of themselves surrounded by their household gods. And, to gratify this desire, one of the first demands on the patience of the amateur photographer will be made by “his sisters, and his cousins, and his aunts.” Though modern photography has undoubtedly shortened the way, still the production of successful interiors, including figures, is by no means easy. A few hints and cautions, however, it is hoped, will lighten the labours of the amateur, and help him over some of his difficulties.

At the outset, under-exposure is almost certain to be the chief fault. To meet this, a golden rule may here be laid down :—Expose for the shadows, and let the lights take care of themselves. To give an idea of the immense gloom of some interiors, an experience of some years ago will be useful. The writer had occasion to make a photograph of the new reredos in Westminster Abbey, and it had to be on a 15-in. by 12-in. plate, as it was for reproduction in the *Illustrated News*, and had to fill a whole page of that journal. A negative of the South side of the exterior re-



quired an exposure of four seconds, and was made immediately before the one in question. The exposure for the one of the interior was commenced immediately after the morning service, and the people were coming in for the afternoon service when it was completed, making an exposure of just three hours, which happened to be exactly right. This illustration will, it is hoped, be useful to those who may have occasion to photograph very gloomy church interiors. The inexperienced are so easily misled by the behaviour of an under-exposed negative under development. The high lights have such a way of asserting themselves, and start into existence so rapidly on the application of the developer, that the amateur who has had no experience in the photographing of interiors is led to believe that he has hit the exact exposure, when, in fact, double the amount would not have been a second too long, and probably not long enough. As prolonged development is desirable in this class of work, the pyrogallic acid may frequently be weakened one-half with distinct advantage; for it is of the highest importance to bring out every half-tone, down to the deepest shadow, without at the same time building up too much density in the high lights. Under-exposure will always produce spottiness—that is to say, the lights will stand apart distinct and separate, and the deeper shadows will be represented by patches of black unrelieved by any details.

Wherever strong high lights, such as windows or very light lace curtains, come in immediate contact with dark shadows, halation will follow. This is a fault well known to the experienced photographer, but it will be well, probably, to describe its effects for the benefit of the beginner. Like the halo round the moon, the light is spread beyond its natural boundary, and gradually diminishes and fades away into the shadow in its immediate vicinity, blotting out as it travels any details in its path. Thus, for instance, in a church window all details in the mullions will be lost, and the outer boundary even will be blotted out by a misty halo. To remedy this very serious defect the reflecting power of the wrong side of the negative must be destroyed. To do this some non-actinic colour may be smeared over the back of the gelatine plate. A little raw sienna squeezed from a tube of moist water-colour will answer admirably when spread with the moistened finger, or by a stiff brush not made too wet. Of course, if a number of plates are required, it will be necessary to mix a small quantity of colour of the proper consistency, and apply it with a brush, dropping the plates into a grooved plate-box until all are done, and then putting them into the slides.

In making photographs of ordinary domestic interiors, naturally those where most taste has been shown in the selection of the objects and

the arrangement of colours will be most successful. The low tone of modern decoration will materially help the photographer, for it is very difficult to produce artistic results in a room with a very light paper on the wall, and the windows hung with staring white curtains.

The most harmonious result will be produced in rooms where the sun is not permitted to enter. It is important, therefore, to select the time when the sun has just left the window, but has still sufficient force to illuminate one side of the room more than the other. If the room should be fortunate enough to have a bow-window, a capital effect may be produced by letting down the Venetian blinds over the main window and one of the side ones, admitting light from one of the side windows only. A description of two interiors before me and the exact method of their production will, perhaps, better help out my meaning than anything else I could possibly write on the subject.

The room is a modern drawing-room with bow-window, and the walls are covered with an unobtrusive paper. The pattern shows in the photograph, but is not at all demonstrative. A lady is seated at the piano and is apparently playing. The floor is covered with Indian matting, and a large Eastern rug occupies the centre of the room. Several antique vases and many other objects are tastefully displayed in various parts of the room. Half the bow-window only is shown, and the blinds are down, but are turned, so that a considerable amount of light is admitted. The principal light comes evidently from the side window not shown in the view, and passing behind the figure of the lady, falls on the pictures and objects immediately over the piano, throwing at the same time the angle of the bow-window into strong relief. The whole scene is full of detail, and the high lights and deep shadows are not straggling, but joined together. A No. 3 stop of a rapid rectilinear lens was employed, and the exposure was twenty-five seconds. The scene is full of life, and the figure of the lady natural and unaffected.

In the next picture more of the room is shown, and the opposite side, including the fireplace, comes into view. A lady is reclining on a couch in the bow-window; some knitting has been thrown aside to make room for a picture-book, which she is looking at with evident interest. The whole of the bow-window is shown, and the light is admitted from the side-window furthest from the figure, and the other Venetian blinds are down; but the glinting light falls on the dark-cream curtains, and dances all over them in irregular bars, the pattern on the curtains, notwithstanding, being well shown. The source of light is nearly hidden by a heavy curtain on the extreme left of the picture, evidently separating two rooms.



The light falls on the profile of the lady, and, passing across the room, falls on a marble mantelpiece, producing an effect Tadema so loves to paint. The whole scene is well lit and delicate throughout, and the effect very real and natural. The exposure was thirty seconds, with the same stop as that employed in the former picture.

Of course, with many interiors a longer exposure might be necessary, and the difficulty of keeping still, which, unfortunately, is too common a fault with many sitters, would add very considerably to the labour of producing successful results; still, by selecting lounging chairs, and giving natural occupation to the sitter, much of the trouble may be considerably lessened.

It is hoped that the above description may serve as a gauge to the inexperienced photographer, and may help him when he is in doubt what to do in a difficult department of photography.

## SOME HOME-MADE APPLIANCES.

BY "DEXTER."



MOST persons in these go-ahead times—when an average man has to get through as much work in one day as his forefathers did in three—acknowledge the truth of the old adage, "Much study is a weariness of the flesh." But those who are wise never let their studies get to the wearisome stage, for they know well that when once the attention begins to flag, the brain has had enough of it, and the work must for a time be discontinued. There are happily few among us who care to be actually idle, and the man who gets through most work, and does it best, is he who seeks change of occupation, not idleness. For brain-work, the best relief is active labour in some form or other. One reason why amateur photography has become so popular is because it tempts its votaries out of doors, and gives just that impetus which will make a man undertake a long, healthy walk in the country; whereas, if he had no object before him in the hunting after the picturesque, he would stop at home. But very often in this changeable climate the would-be view-hunter is *forced* to stay at home. It rains, or it is too windy, or the clerk of the weather has been playing some other prank which makes photography impossible. What is to be done? The best remedy, if the worker is one whose usual occupation is of a sedentary nature, is to take up some work which will employ the muscles rather than the brain. There is nothing better than a little carpentry to afford this required change of thought and work; and the photographer can find endless occupation for his spare hours if only he knows how to handle a few tools intelli-

gently. Shelves, boxes, and other conveniences for his dark room may be undertaken to begin with. After this he will look around him for "pastures new," for the pleasure of making things is one which grows upon what it feeds. Let us point out how two or three useful appliances may be knocked together by the home worker.

### A PLATE-RACK.

A plate-rack is quite as much a necessity to the photographer as its prototype is to the scullery-maid. Indeed, it is more so, for whereas she of the plates and dishes uses it merely for draining, the photographer can turn it to half-a-dozen different purposes. Newly-washed negatives stacked in it and put out in the open air on a warm day, will be bone-dry and ready for varnishing in about half-an-hour. After varnishing it is as well to leave plates for an hour or two with the air playing freely round them, so that the varnish may get thoroughly hardened. Here, again, the plate-rack is the best support. If negatives require to be

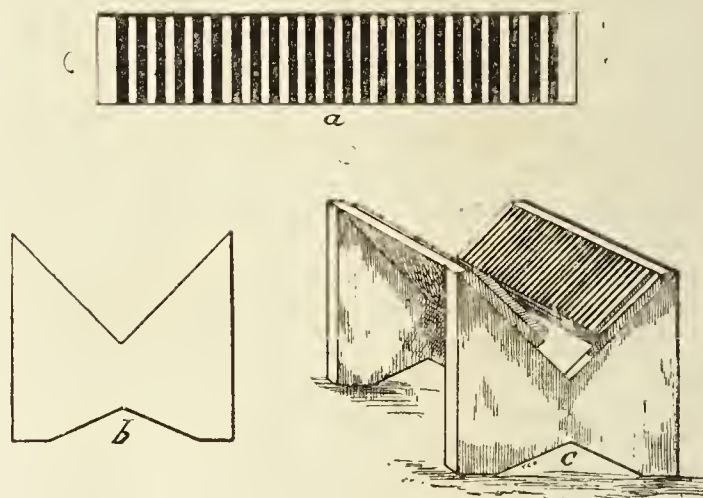


Fig 1.--Plate-Rack.

intensified, touched up, or in any other way treated, the plate-rack is the most convenient thing to have at hand, for it holds the brittle glass with a firm grip, and lessens considerably the chances of breakage. For these reasons it is as well for the photographer to be well provided with these convenient little helps. A plate-rack of the annexed form can be very easily made; and if cardboard patterns be made in the first instance, duplicates can be turned out with great speed. The contrivance consists of three pieces of wood, each of which must be in duplicate for each rack required. Grooving can be bought at most photographic dealers at so much per foot run, and it is generally made of pine board eleven inches wide. The piece *a* represents two inches of such a board. Alone it would be far too fragile for our purpose, for it is not only cut against the grain, but every groove represents a place of possible fracture. We must, therefore, cut



a piece of pine, two inches broad and a foot long, to glue on to the back of the piece of grooving. This will afford a projection of half an inch at each end, which will leave space for screws to attach the grooves to the ends, *b*. The ends, *b*, should be cut out of wood nearly an inch thick. The cut marked *c* will show how the rack should appear when finished. Its size must be adapted to the wants of the worker, and it will be readily seen that one can be made of such dimensions as to hold quarter-plates or 12 by 10 plates indifferently. If, however, plates of the latter, or larger, size are in question, it is far better to make a rack which will have such a gap that they will be held securely.

In glueing the grooving to its supporting piece, thin glue must be used, and a few fine French nails (called pins) can assist in holding the pieces together. They should be put under pressure until the glue is hard. The edges can then be trimmed and rubbed down with glass-paper. Brass screws should be used in attaching the grooves to

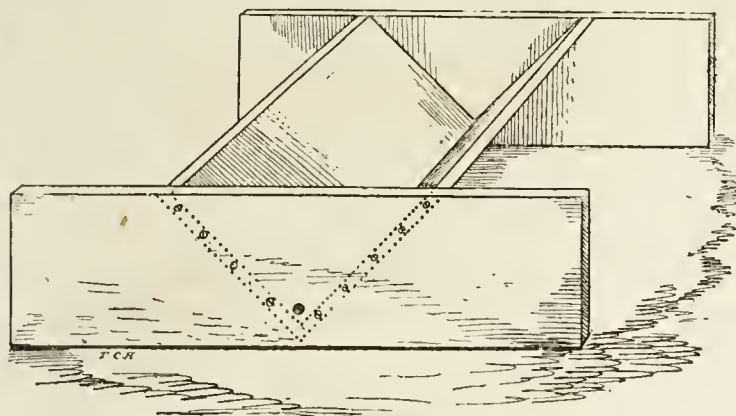


Fig. 2.—Washing Trough.

the ends of the rack, and care should be taken that the grooves are parallel with one another on each side, so that when the plates are resting in them they will not be askew. When all is fastened together and complete, the wood should have a coating of strong size previous to being varnished.

#### A WASHING TROUGH.

On page 33 of our last issue Mr. Dresser's wooden trough for washing negatives is briefly described. As many of our readers may be glad of a few hints by which such a trough can be readily made, here are some details concerning it. The cut above almost explains itself. It will be noticed that the construction is most simple, only four boards being required. These should be of hard, well-seasoned wood. The two end pieces serve a double purpose, for while they effectually form ends for the trough, they also act as feet for its support. The wood should not be less than one inch in thickness, and should be cut to a size to meet the requirements of the person making it.

The only point where particular care is necessary is (1) in cutting the ends of the trough-pieces perfectly square, so that no leakage occurs when the apparatus is finished; and (2) in taking care that one of the boards forming the trough is an inch broader than the other. This is indicated by the dotted lines. These two pieces, forming a right angle, should be screwed together (with brass screws) first. The ends can then be attached; but this time longer and finer screws must be used, for they have to pierce the wood in the direction of its grain. The round hole for the reception of a tap must be cleanly cut with a centrebit. When all is finished and trimmed up in a workmanlike manner it should have a coating of hot gas-tar.

#### A FUNNEL-HOLDER.

For filtering and clearing various solutions used in photography, glass, earthenware, or vulcanite funnels are employed to contain the filter-paper, or the tuft of cotton-wool used as the strainer. The best support for a funnel is a retort-stand, but as

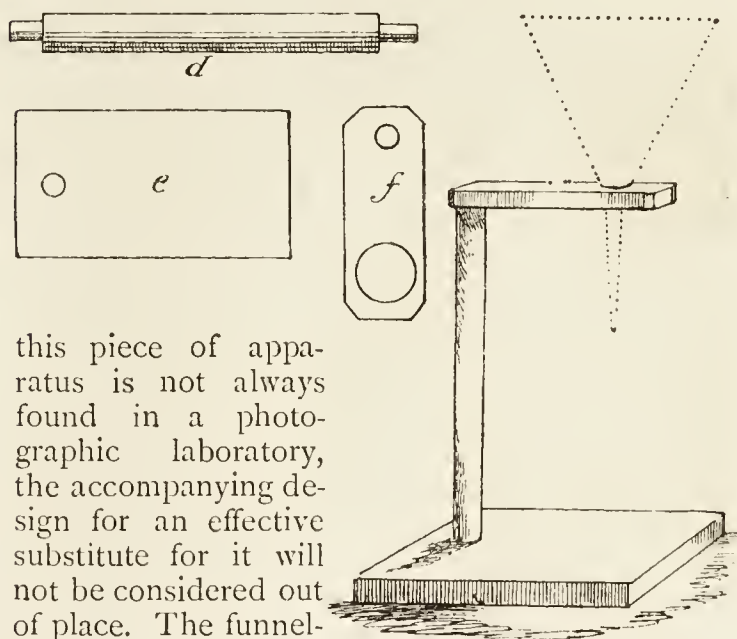


Fig. 3.—Funnel-Holder.

this piece of apparatus is not always found in a photographic laboratory, the accompanying design for an effective substitute for it will not be considered out of place. The funnel-holder should be made of mahogany or any hard wood, and consists of three pieces, fitting one into another. It may be glued together, or left so that it can be readily taken apart and packed away in a very small space. In the illustration, the three separate pieces are lettered *d*, *e*, and *f*. The first piece is about twelve inches long by one inch in thickness, and is best turned in a lathe, if that useful tool is at hand; if not, it can soon be cut into form with a saw and plane, and smoothed down with glass-paper. At each end its diameter is reduced to one-half. The base of the holder is formed of a piece of board, measuring about five inches by seven inches, and at one end of it is bored a centrebit half-inch hole for the reception of one end of the rod *d*. The remaining



piece of wood, *f*, has a half-inch hole at one end, and a much larger hole for the admission of the funnel at the other end. When put together, the holder should have the appearance shown in the remaining illustration, where the position of the funnel is indicated by the dotted lines. The wood can be varnished or French-polished, according to the taste and skill of the worker.

#### PHOTOGRAPHIC DISHES.

A supply of dishes of a size corresponding to the plates in use is one of the first requisites in photography. For actual development nothing is better than ebonite, for the bottom of the dish is so flat that the whole of the solution remains where it should be, on the surface of the film. Porcelain dishes can be used with advantage for other purposes, such as toning, fixing, &c. Occasionally, however, the photographer wants a dish of large size. He may be operating with large sheets of bromide paper for enlarging purposes, and many will, perhaps, hesitate to undertake such work, mainly because dishes of a suitable size are not ready to hand. Papier-maché dishes can, of course, be bought, but they are necessarily expensive luxuries, and the operator will scarcely care to spend much money over things which are only occasionally employed. Dishes large enough for such work can be made at home at trifling expense if only the photographer is, as he should be, something of a carpenter. Let us now give plain directions by which a dish three by two feet can be constructed. First, we shall require a piece of inch pine a little over ten feet long and two inches broad. This has a groove run along one side of it, as shown in the cut. A grooving-plane, or a plough furnished with a quarter-inch iron, will be the tool for this portion of the work. If preferred, the wood can be cut up into lengths to form the sides of the dish before the groove is made. These lengths will consist of a pair of pieces thirty-eight inches long, and another pair twenty-four inches long. At the end of each, holes for screws are bored, as shown.

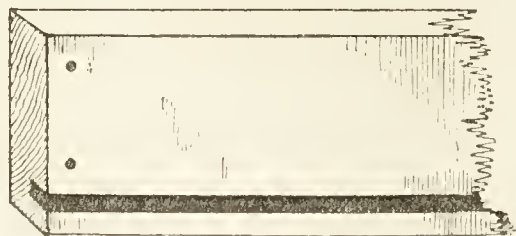


Fig. 4.—Side of Dish, showing Groove for Glass.

So much for the sides of the tray. The bottom is best made of thick glass, and should measure three by two feet, plus three-eighths of an inch on each measurement, to allow for a margin which will fit into the groove. The glass should be perfectly

flat, and should be carefully cut so that there is no irregularity on any of its edges. To fit the frame together, screw the sides in pairs, each pair consisting of a long and short side. So far, then, we shall have two L-shaped pieces, which, when brought together, will form the four sides of the dish. But before this is done the groove must be charged with a soft putty made of white-lead and red-lead in equal proportions, rubbed down with drying oil by the help of a palette-knife. Having so charged the groove in each L-piece, the glass can now be firmly pressed into one of them. This will require some little force. The best way to manage it is to stand the glass on edge on a table, then bring the wooden angle-piece over it, and tap it with a mallet. The other L-piece is now brought into position in the same way, and gently forced into its place. The two open corners of the dish can now receive their screws, and the putty which has exuded can be neatly scraped away. At each corner of the now-completed dish there will be a small square opening on the outside, marking the end of the groove. These must be filled in with putty. After the dish has been allowed to rest for a couple of days, the woodwork can receive a coat of hot gas-tar. This compound is not a very pleasant thing to use, but it has the advantage of permanence. A mixture of resin and beeswax is often recommended as a waterproof compound for photographic purposes. But we do not advise its employment, for two reasons: in the first place, it chips off in dry weather; and in the second place, some alkaline solutions form with it a kind of soap. A dish with a glass bottom allows the operator to examine his picture by transmitted light, without shifting the paper or glass upon which he is working. He has merely to raise the dish above his red lamp to watch the progress of the operation upon which he is engaged.

#### ON RENDERING PAPER NEGATIVES TRANSPARENT.

BY W. E. WOODBURY.



THE making of negatives on paper coated with a gelatino-bromide emulsion has received a great impetus within the last year or so.

The difficulty, however, of rendering the films transparent has hitherto proved the chief obstacle to the use of this paper, and a consideration of the various means adopted to obviate this difficulty is the purpose of this article.

Some photographers have stated that any special treatment of the paper to make it transparent is superfluous, as it prints sufficiently well when



allowed plenty of time in the printing-frame. But this is not the case. All papers manufactured at the present time contain more or less grain, which is decidedly objectionable, especially in small photographs, and this grain can be nearly, if not entirely, removed by the use of certain solutions. That better prints can be obtained from negatives so manipulated cannot be doubted.

Various methods have been practised to effect the requisite transparency. Each has its ardent advocates; but a considerable experience warrants the statements that no one is entirely satisfactory, and that the different processes to be mentioned here have been found pretty much on a level with respect to results. That being the case, it may be left to the option of the reader whether he choose one means or the other. Castor oil (certain youthful reminiscences connected with which forbid our naming it without a shudder), may be first mentioned, perhaps on the principle that it is well to be soon rid of an unpleasant subject. Probably, some will altogether object to working with it, but it answers as well as any other method, the best recipe being the following: take of castor-oil, five (5) parts, and of ether, one (1) part; place the negative, face downwards, upon a sheet of glass, and spread the solution thickly over it; well warm it till the oil has thoroughly soaked into the paper, and when cool, remove the superfluous oil, and again warm; should any of the oil get on the surface, it can be immediately removed with a little ether.

Another method adopted is by using Thomas's india-rubber solution, two (2) parts, dissolved with two (2) parts Canada balsam, in three (3) parts pure benzole, and rubbing well into the back of the negative with a piece of cotton-wool till thoroughly soaked and dry.

Passing through melted paraffin wax is also an excellent method. This must be effected at a temperature so low as to enable it to thoroughly penetrate the paper. Better *not* to iron, as so often recommended, but simply to warm, and with a piece of soft cloth take off the superfluous wax. Paraffin cools instantaneously, and does not soil the albumenised paper; it renders the paper perfectly free from granularity, and prints very rapidly.

A process by no means easy, but which we have ourselves carried out with great success, is the following:—gum dammar twenty (20) parts, and gum elemi five (5) parts, dissolved in one hundred (100) parts of benzole. Pour into a flat dish, and place the negatives in one after another, and allow them to remain for about five minutes; at the expiration of that period remove and hang them up to dry. Benzole must be constantly added to the solution, in consequence of its speedy evaporation. The negatives

will be found to be wonderfully transparent, and, of course, require no varnishing. If Vaseline is employed, the negatives must be kept constantly between oiled sheets.

The different means that have hitherto been suggested or employed for rendering paper negatives transparent has thus been brought before the reader. Each one has been practically tested, and the professional or the amateur can finally adopt that which he finds he can work best to his own satisfaction.

## AN EXCHANGE OF PHOTOGRAPHIC PRINTS.



THE following remarks, recently brought before the Edinburgh Photographic Society by the hon. sec. (Mr. G. G. Mitchell), are worthy of the attention of all kindred societies:—

“So far as I have been able to learn, there has never been carried out successfully amongst the members of the Edinburgh Photographic Society any plan by which an exchange of work could be satisfactorily effected, apart from the aid of the ballot—which, of course, precludes the idea of choice; and I am also unaware of such a plan of exchange as I wish to refer to being presently in operation in connection with any other of our British Societies.


“There are certain difficulties in the way of making an exchange of photographs, which do not, perhaps, at first sight appear; but which, when we come to attempt practical working, present themselves very strongly. It is, however, a very desirable thing that some easy and unobjectionable scheme should be in operation amongst us, so that all who cared to co-operate in the matter might do so. Many members possess good negatives of places or subjects of interest of which they would be pleased enough to exchange copies for prints by fellow-members, were there some organised means of doing so. The possessor of even one fine negative might in this way acquire quite an excellent collection of photographs, but how to accomplish this without the likelihood of raising certain awkward situations is a problem which has been found a little difficult to solve. The possessor of a really good negative is not willing, we may be sure, to make prints from it in exchange for anything he is offered. He would be foolish if he did so, and to refuse may occasionally be unpleasant. He may not care a straw for the subject of that which is offered, or the print may be of a poor quality, or, in fact, of no value to him at all. What is wanted, then, is some method by which parties *mutually* willing to make an exchange could be accommodated, and those who did not choose to deal, left as they are without offence given. I have thought out a plan which I think helps the matter, but which doubtless could be improved upon.

“In the first place, I would not have the persons exchanging work brought directly into contact, but manage the transaction by means of a third party, who should have the charge or direction of the scheme, in some such way as this: Suppose such an



appointment made, one gentleman, who had charge of the exchange scheme; to his custody all prints intended for exchange should be given. His duty then would be to place these in such a way as might be found best for the purpose of letting them be seen, and number them consecutively. If any member then noted a picture which he would like to possess in return for his own, let him intimate this to the custodian, who would make a note of it—say No. 7 is willing to exchange with number 20, or it may be several numbers, but he takes no further action in the matter till it pleases No. 20, if it ever does so, to also intimate his willingness to exchange with No. 7. If no such intimation is given, then nothing whatever is done further in that particular case. The custodian keeps his own counsel, and no one is offended at being refused. No one should be offended if his print is not asked for; the fact ought rather to exercise an educational influence on the producer; and as the prints may remain indefinitely with the keeper of them, it will not be made conspicuous whose prints are being exchanged, and whose are not. I hope I have made myself sufficiently plain. The scheme is a very simple one, and I hope my description of it has not made it look otherwise in any degree. I think that all the prints should be unmounted, so as to entail as little trouble as possible upon the producers, and in order to allow of those who receive them mounting them in any particular manner they prefer. As to dimensions, no rigid rule need be understood, but the half-plate may, perhaps, be regarded as a convenient size to adopt."

## COPYING DRAWINGS WITH THE CAMERA.

HE first rule we have to consider consists in examining that the focussing-glass of the camera and the camera-front are parallel to the drawing-board on the easel which contains the drawing; carefully measuring the distances is highly to be recommended. The focussing-glass must be grained with the finest grain. I seldom could find one in the market, proper for the purpose of focussing the most delicate parts of a steel-engraving, and I grained all my focussing-glasses myself with finest emery-dust, water, and a perfectly flat-surfaced piece of glass. No other than "patent plate" will allow to get the work satisfactorily done.

The second thing to be taken into consideration consists in examining the lighting of the drawing. Our readers may be reminded that each elevation, caused by the grain of the paper, will have a surface on one side, inclined towards, and on the other side from, the source of light. This effect must be got rid of by having light falling from all sides on the picture. Front light *alone* might cause reflection.

In copying maps and geometrical plans, there is another thing to be carefully attended to; we must use a *rectilinear lens*, which reproduces lines and angles in their original value; the straight line of the original must be a straight one, as well as in the negative, and the right angle must not be altered in any way.—*The American Lithographer and Printer.*

## Reviews.

1886. *Figaro Salon*. Par ALBERT WOLFF. (Boussod, Valadon & Cie., Paris and London.)



HIS important work consists of splendidly-executed process engravings of a selected number of pictures which appeared in this year's Salon. Hitherto the work has taken the form of a supplement to the *Figaro*, but now—owing, perhaps, to the perfection to which the *photogravure* process has attained—it is published as an independent work. The pictures are reproduced by the Goupil process, by Messrs. Goupil's successors—Messrs. Boussod, Valadon & Cie.—while the descriptive text is furnished by M. Albert Wolff. This partnership, in every respect, is a very happy one. It is quite a treat to look over these handsome pages, for—barring the colours—the pictures exhibit every touch and mannerism of the artists' brush. The work will be complete in five parts, four of which have already appeared. The price is two francs each part—a very modest sum when it is remembered that the size is folio, and that each number contains nearly twenty pictures. Among the most successful reproductions may be noticed the following:—In Part I. the beautiful study by I. Israels of an old peasant woman warming her rugged hands over a slender fire, with the touching title, "Quand on devient vieux." We actually see in this picture the lumps of pigment with which the artist has intensified his high lights. In No. 4 is a remarkably fine landscape by H. Zuber, "Sentier perdu." This lost path resembles one of the glades to be found in plenty in the more remote parts of the New Forest. The ground is crowded with a network of ferns and brambles, while overhead the meeting branches of beautifully-drawn beech-trees form a canopy through which the sunlight has difficulty in forcing its rays. The reproduction has all the beautiful softness of one of those drawings on stone by J. D. Harding, which delighted the students of a generation back. We could not give it higher praise. The only other work which we can afford space to notice is the fine picture by Morlon, "A nous! à nous!" We have here represented the crosstrees of a ship which has sunk beneath an angry sea. Two sailors are clinging in desperation to the mast, and it is their cry of agony to a rescuing boat, which they are supposed to see, that gives the picture its title. We put down this noble book with some feeling of regret that nothing of the kind is attempted in London. Our exhibitions come and go, and there is no permanent record of them but their catalogues. It is true that, of late years, certain publications have appeared giving outlined sketches of the pictures—but these, of course, are but sketches, and cannot be named in the same breath with the examples of art reproduction to which we have just adverted.

*Colour and Colour-printing*. By W. D. RICHMOND. (Wyman & Sons.)

AT a time when the art of colour-printing is becoming so closely associated with photography, this book is one of great importance to the student. Besides giving a very clear description of the prin-



ciples involved in the application of pigments to the printing-press, the work contains an introduction to the study of colour. It also comprises a valuable account of the different pigments employed, giving a concise history of each, and hints as to their permanency. Mr. Richmond's book fulfils a want in presenting in convenient form a mass of information not generally accessible.

## Correspondence.

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### THE PLATINOTYPE COMPANY AND ITS CRITICS.

To the Editor of THE CAMERA.



IR,—We observe in a note at page 26 of the June issue of the CAMERA certain remarks in reference to the Platinotype process and the course we have taken in regard to it.

We should have thought that we had explained the cause for our action so frequently that not only the writer of the note, but also Mr. Greenwood Pim, would be thoroughly cognisant of and would have approved our method—at least as regards the sending-out of paper freshly made and *direct* from our works.

We have stated over and over again that the dissemination of the paper by dealers in various parts of the country is fraught with extreme risk to the quality of the paper itself. Mr. Pim himself states that the keeping-properties of the paper are not of the best, even though the *careful* (are we to presume this?) *user* of it has it direct and fresh from the manufactory.

Now, though we do not go the length Mr. Pim appears to do in setting forth the instability of the paper (seeing that good prints have often been produced by licensees on paper a year old), yet his remark is a very apt peg on which to hang the inference—if paper keeps badly in the hands of so very *interested* parties as are the sole manufacturers and the purchaser and user, how much more badly may it be expected to keep in the hands of persons ignorant of the process, and, through their assistants, generally more or less careless of the result, provided the sale is effected?

We know, from an experience a thousand times repeated, how persons treat the paper who *think* that they know enough on the subject to teach us; and we also know how agents in foreign countries have at times treated the paper.

Now, we would ask the writer of the note, and all who, more or less thoughtlessly or unknowingly, think with him, Is it not better to obtain paper *freshly made*, and from the very interested producers *direct*, than, for sake of avoiding writing a few lines and a few pence for postage, to obtain paper of bad or doubtful quality from dealers in the part of the country in which they reside?

Platinotype paper is not in the same category with dry-plates. First of all, the paper does not keep good for so long a time; secondly, *custom*—a great tyrant—has laid it down that, while dry-plates may be put up in packets of one dozen, and practically never sold in less quantity, yet paper shall be sold in any quantity,

not less than one sheet (thus two sheets, three, four sheets); and, further, that “cut-up” paper shall be supplied in various sizes. This being so, it at once becomes evident that the dealer or agent must either “break bulk” and handle the sheets at various times [How would plate-makers like their plates to be handled, even in fittest of dark rooms? Would they still hold themselves responsible for the quality of the plates, even though the handler were most careful and had a “full knowledge of dry-plate work”?]; or else we (the manufacturers) must send out in air-tight and expensive cases single and other sheets and sizes of paper.

But, even then, there is no means for knowing the age of the paper sold by the dealer, unless the dealer stated it, or it were marked upon the case. But then, how about the paper which, in the hands of persons having *uncertain sales*, would accumulate, so as to be, at least, anything but fresh? Who is to pay for this?

We submit ourselves to be neither philanthropists nor fools; we are simply actuated by making all the money we can honestly, and by no shortsighted policy, which may be all very well in a Cheap Jack—here to-day, gone to-morrow—but woefully misleading and suicidal in a firm which fancies that it has a business and a process as lasting as the hills.

If we were to send out paper to dealers to-morrow and for some weeks following, we have no doubt that our sales would be augmented in very considerable degree (into *profit* we will not go); but what would be the verdict of these same dealers—in most cases—and of the buyers at the end of the year? And what the influence of that verdict upon the reputation of our manufacture? Certainly it would not matter much to *some*.

No; we are quite content to satisfy as many men as possible who deal with us; further, we do not complain of meeting with the same steady progress that other good and solid concerns invariably do. If the process does not go up like a rocket, neither will it come down like a stick, as most heavily “boomed” things do.

We may add that it would be easy to state that *our* paper has “the largest sale of any paper known”; or that it is a “cheaper paper than so-and-so’s”; but we think truth an important element in commercial matters, as in private life—not that we should not be sharp enough to perceive that so ridiculous a statement as the former one (seeing the enormous sales of albumenised paper) would only raise a laugh among those whose opinion is worth having; while the latter in any case would be received with scorn; but especially if not true.

If we may be permitted, we should like to add a few words about the license fee—that exorbitant sum of 5s. ! Now, whilst it is quite true that we are in no way bound to screw this trifle out of would-be users’ pockets, yet it is the case that a license—a document signed and agreed to—is necessary in order to preserve our rights as holders of the patents. Further, we concede that we are not bound to demand that licensees agree to purchase the paper (and certain chemicals for sensitising, if used) from ourselves; but, we ask, who, being legally *sole owners* of any property—being simply business men—would permit strangers to *make use* of such property, merely expressing the hope or trusting that they (the strangers), in their “gratitude” (Is there such a thing?), would continue



to give their custom in return for the philanthropic concession made to them? Flimsy and vain hope! Such a license, without provision for purchase of material, is all very well when it is sought to recoup expenses of patents and to obtain reward for work and invention by the payment "down" of *large sums*, or by valuable royalties; but when the wee sum of 5s. is considered too much to pay by some amateurs, how are we to obtain reward for our invention and improvements unless we secure to ourselves the sole supply of the paper?

Another class will say, "We don't complain of obtaining the paper from you (especially as they do not expect to be able to obtain it elsewhere), but why charge us 5s.?"

Well, we think we should be paid, in some degree, as inventors and patentees, as men who have expended much brains and time in bringing the process into existence, and in improving it; processes, too, involving great expense. Then we also expect the ordinary profits of manufacturers and dealers (if we could get them), for not only do we invent and improve, but we also *provide the material*, a course for which those who know about processes and their history ought to be suitably thankful. How many processes are "choked" in their infancy for want of careful nursing, clothing, feeding, and trotting-out! Not all men care to risk burning their fingers in demonstrating to unwilling or sluggish minds the value of that which they themselves appreciate.

We have said "ordinary profits of manufacture." Well, but judging by what we know, we do *not* obtain such profits; and this must be patent to all who know something of the profits of many plate and paper-makers. We do not say that we are more liberal or philanthropic than other manufacturers; we think it answers best not to charge a high price. On the other hand, we are the victims of circumstances, viz., the cost of raw material and of manufacture. Let—to give one instance only—any one look into the lists for the difference in price of metallic platinum and of silver respectively. We think if they will take this into consideration they will come to the conclusion that our papers compare in price very favourably with other papers. It is not our fault that we work with a very expensive metal. Neither have we ever gone about stating, truly or otherwise, that our paper is cheaper than so-and-so's. Such tactics do not suit our views.

We are persuaded that the public have nothing *in our action and treatment worthy of complaint*. There is a good old saying, "Put yourself in his place." We should like to see some of the dissatisfied ones in our "place" for a short time, with the property to dispose of. What high-souled liberality and wonderful business capacity would be displayed!

It is on record that at the recent meeting of workmen and Socialists in Trafalgar-square, one—we know not which "class"—loudly expressed his willingness, if the gods should decree him an income of £1,000 a-year, to give up to the revenue of his country *one-half* of this sum. He would not demur to be taxed to the extent of one-half of his income. *O! si sic omnes!* The moral is obvious.—We are, Sir, yours faithfully,

June 19, 1886. THE PLATINOTYPE COMPANY.

## Answers to Correspondents.

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[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

X.—If, as you allege, your plates invariably frill, your best course to pursue is to buy some of another brand. If you have a stock of the faulty ones, keep them in a warm dry place for a few weeks, and they will probably then be cured.

ENQUIRER.—The report you allude to is quite without foundation. We know its source, as well as its object. This magazine has no connection in any way whatever with a trading company. The name of its sole proprietor appears upon every issue.

PINEAPPLE.—Articles upon the subject you name would be quite unseasonable at present. They will appear later on.

HERBERT R.—See the article on "Retouching" in our present issue, in which all your queries are answered.

DIONYSIUS.—Thank you. The matter shall have attention in due course.

LANTERNIST.—For reasons into which we have not space to enter, it is undesirable to use a single lens of less than 8 inches focus. This will give you a 15-foot disc at a distance from the sheet of nearly 40 feet. If you want a picture of that diameter at a distance of 25 feet, you must use a lens of shorter focus. A good quarter-plate photographic lens will answer your purpose well.

H. HAWKINS.—The reason why your bromide paper prints turn yellow in certain parts after they are dried is, that they are insufficiently fixed. Let them remain for ten minutes longer in the hypo bath, and before they are finally removed examine them by holding them up with a light behind them. If they are not thoroughly fixed they will appear to be cloudy, owing to the undissolved bromide of silver remaining on the surface of the paper. But perhaps the yellowness may be owing to iron stain from the developer. In this case, a wash in water, soured with sulphuric acid (one part in eighty of water), will cure the evil.

J. ROACH.—See our advertising columns.

OMEGA.—Apply to the secretary. There is a charge of 1s. per square foot for wall space, but this is remitted if you become a member of the society.

DAGUERRE.—Both books are quite reliable, and, we may add that both should find a place in a photographic library—"Two heads are better than one."

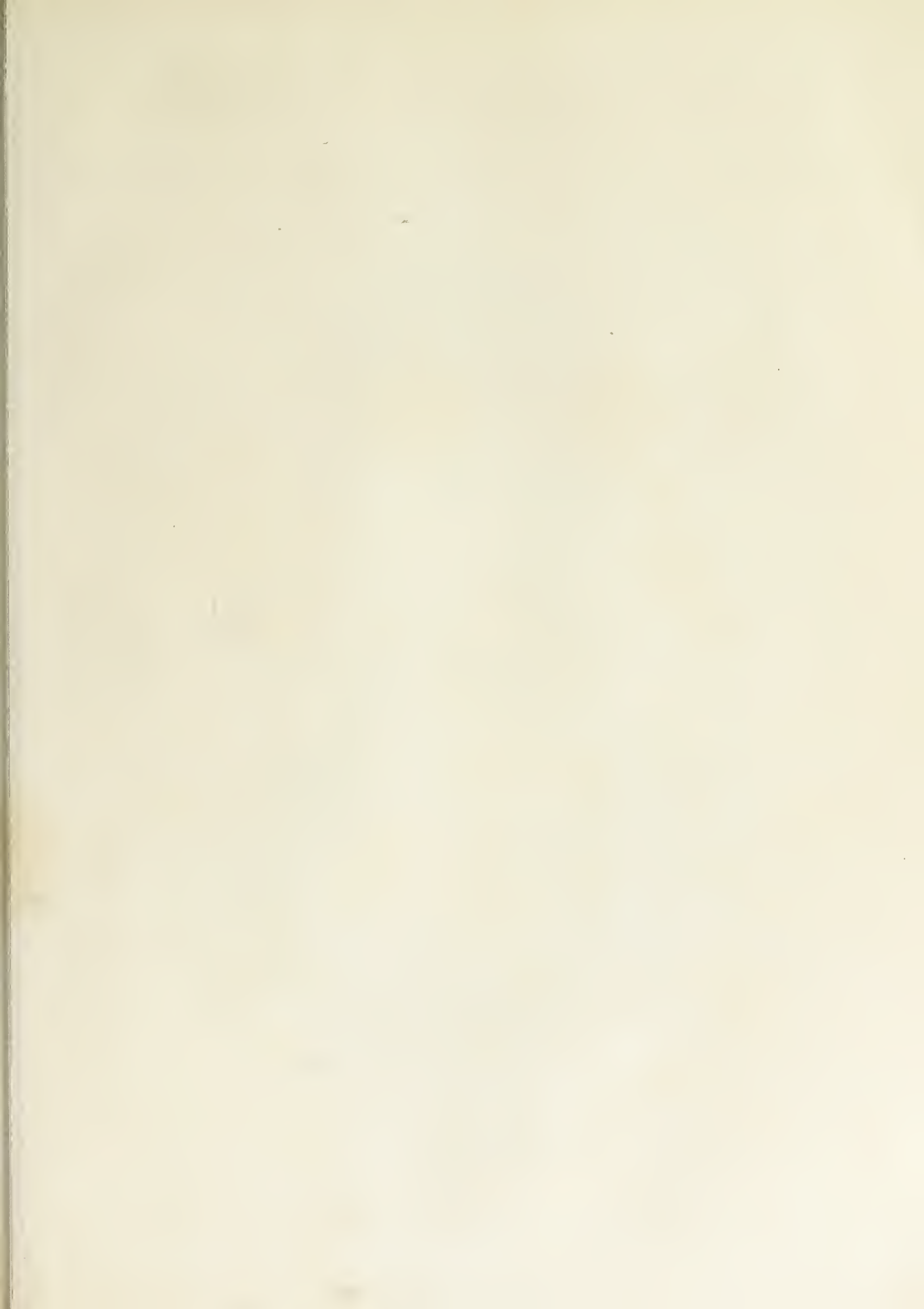
A. HATCHWELL.—Your questions can be answered by a glance at any manual on photography. We are sorry that we cannot devote a page to replying to them.

*All communications should be addressed to the EDITOR OF THE CAMERA, 15, Bedford-street, Covent Garden, London, W.C.*

*Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.*

*All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.*









ALEXANDRA.

*(Engraved by the Meisenbach Co. Lim., 31, Farringdon-street, from a Photograph by Walery, of Conduit-street, Regent-street.)*



# ❖ THE CAMERA ❖

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

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## Sayings and Doings.

**T**HE following pithy paragraph lately appeared in a weekly paper: "The way to break stones is to enclose them in a box marked *glass*, and send the box a few hundred miles by rail, when the stones will certainly be macadamised." There is much truth here spoken in jest, as many of our readers can testify. A railway porter can no more handle a parcel tenderly than he can close a carriage door gently. But surely the macadamising of negatives and plates sent by post or railway is not all the fault of the carriers. We have had negatives sent to us with a piece of thin board on each side, one side bearing the address and necessary postage-stamps. At the post-office the clerk has, in duty bound, brought his date-stamp to bear upon the package, and has also had to cancel the postage-stamps. In these operations the negatives have, of course, been cancelled too. Moral: Always put name, address, and stamps on a parchment luggage-label, attached by string to the parcel.

"SEND your negatives in wooden box, with cover screwed on." Here is the conclusion of the whole matter, being part of the advertisement of a retoucher which appears in the *Philadelphia Photographer*. We lately travelled about six hundred miles by rail and steamboat, taking with us 120 plates, and bringing back nearly 100 negatives. During the time occupied—a week—the plates had to be handled and changed continually, but not one was broken. A piece of tissue-paper, as

large as a plate, separated each from its neighbour, and they were wrapped up in parcels of one dozen each. We can cordially recommend this simple plan to tourists. Let the tissue-paper be perfectly new, and do not think that pieces of newspaper will do as well. You can, however, use the latter if you do not object to the type repeating itself all over the gelatine surface of the plates.

IN a recent number of that excellent periodical, *The Scientific American*, there appeared a drawing of a pinhole camera, of about the most simple design possible. It consisted of a box like a pill-box, with a piece of foil let into the lid, so that a needle prick would secure a small orifice free from jagged edges. Within this box was placed, when required, a disc of Eastman paper, and a negative could be secured by a few seconds' exposure.

MR. HENDERSON, of King William-street, showed us some time ago some most successful pinhole pictures that he had himself taken. If we remember rightly, his camera, instead of a lens, had fitted to it a thin brass plate, pierced with the smallest drill that he could obtain. The results he obtained were certainly very wonderful. A full-length carte-de-visite portrait, taken in his studio, required an exposure of ten minutes, while another picture of a statue of the Prince Consort, taken in the open air, was executed in this camera without a lens in the comparatively short time of twenty seconds.

THESE experimental pictures are very interesting, because they prove the truth of a theory which



is held forth in every book upon optics and photography. Many theories we are forced to accept on the word of the inventor, and there is always some satisfaction in proving to demonstration that the theory can be borne out by practice. The demonstration in this case would hardly have been possible before the advent of our modern, rapid, dry plates; now, thanks to them, it is most easy of accomplishment. Those who wish to try their hands at these pictures need no more hints than those which we have just given. But they may be reminded that focussing with a pin-hole for a lens is neither possible nor necessary.

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THE last issue of the *Philadelphia Photographer* has for its frontispiece twin pictures by Mr. H. P. Robinson, of Tunbridge Wells, entitled "The Valentine." These rustic interiors are full of life, and show that mastery of detail and management of light in which this painstaking and talented photographer so much excels.

\* \* \*

FROM the same journal we glean some hints which escaped from the discussions at the late photographic convention at St. Louis, and which we think may be useful to our readers. Such hints and variations in common practice can frequently be heard at meetings of our own societies, but they too often pass unheeded, unless there is some diligent follower of Captain Cuttle in the room, who knows the value of the recommendation, "When found, make a note of."

\* \* \*

MR. D. R. CLARK, of Indianapolis, reminds his hearers that frequently after washing a negative a yellow colour is observable, which must, if possible, be removed. This, he says, can be done by the use of the following preparation—

Saturated solution of alum ... 10 oz.  
Oxalate of potash ..... 1 oz.

This solution, we are told, will usually remove the yellow colour, and reduce the strength of the negative. He adds, that in his experience, if it is desired to remove the colour from the negative after fixation, the fixing must have been thorough, or there is every chance of spoiling the negative.

\* \* \*

THIS gentleman might have also mentioned that in all cases where it is required to doctor a negative, either in the way of reduction, intensification, or what not, the thoroughness of the fixing process should be rendered beyond suspicion by immersing the negative in a second and freshly-mixed solution of hypo, after it has been fixed as usual in the ordinary bath. Some photographers make a practice

of doing this, and avoid by the double fixation many after difficulties with their pictures.

\* \* \*

HERE is another good hint from Mr. Beckwith, of Cleveland. He had an order for a picture from a negative, the original of which was dead. One whole side of the film had turned a yellow colour. In order to remedy this unhappy state of things, Mr. Beckwith determined to make a new negative, which he did with the following very clever modification of the usual method. He made a transparency; but, before doing so, he placed a sheet of yellow gelatine in front of the negative, and made the necessary exposure through this yellow medium. By this means he obtained a positive free from stains, and of even colour. With such a positive, the production of a new negative was, of course, easy, and the order was duly executed to the satisfaction of the photographer and his client.

\* \* \*

HERE is another little hint which will be useful to photographers who are much engaged in portraiture. It is due to Mr. Rollins, of Indiana, "I will tell you how I get up a smile. I had a German operator, and when he was ready to make an exposure, he said, 'Now, you shoost smile a little inside.' I thought that was a good thing, and I always repeat it. If they will smile a little inside, that will bring out the expression."

\* \* \*

MR. S. G. BELLINGER exhibited at the Convention a number of pictures which were stage scenes taken by the electric light. The results were said to be very beautiful, notwithstanding the difficulties involved in taking such pictures. The negatives were developed thus:—"The plates were well washed in water, then in sulphite solution (strength not stated), afterwards adding pyro as required."

\* \* \*

WE must not forget that we have just had a convention of photographers of our own, which met at Derby on the 12th ultimo. This, the first meeting of the kind, was supported by nearly one hundred members, and when we consider that the convention is a new thing, and that those who attended it came from all parts of the country, we can but look at it as a good beginning. Glasgow is the chosen meeting-place next year, and we have no doubt that by that time a much larger muster of enthusiastic photographers will be brought together. Many most interesting papers were read by such master photographers as J. T. Taylor, W. K. Burton, Richard Keen, Andrew Pringle, William Adcock, H. P. Robinson, William Cobb, W. B. Bolton, A. L. Henderson, and others too numerous to mention.



## PHOTOGRAPHS OF OLD LONDON.

BY THE EDITOR.



ABOUT ten years ago a society was established for photographing such relics of London as were likely to be demolished in order to make room for newer, and generally far less picturesque, buildings. The labours of this useful society have recently come to an end, not from any lack of support or paucity of funds, but simply because it has fulfilled its mission, and can find no more relics to photograph. It is not every society in this society-ridden kingdom which dies with such a good record of its life's work as this one shows. It has taken between one and two hundred photographs, which have been printed in carbon, and distributed among its subscribers. When we mention that Messrs. Dixon & Son, of Albany-street, was the firm to which this part of the society's work was entrusted, it is equivalent to saying that the photographs are of the best. That this society was founded none too soon is shown by the fact that more than half of the places photographed have ceased to be. In this money-making age there is little time for sentiment, and buildings which have been identified with some of the most noteworthy doings of our national history have been hurried out of sight, so that new bricks and mortar, which will give a better return in hard cash, may take their place. Many of these old relics have been photographed, and these pictures are all that remain to us to tell future generations what the originals were like. This little society, which has done so much good, should not be allowed to pass out of sight without some review and recognition of its work. With the pictures before us, let us try to follow out its doings.

What a pity it seems that the art of photography, or something akin to it, was not at the disposal of mankind a few hundred years back. What interest we should all feel if we had before us a panorama of London from the first period when men fixed upon it as an abiding-place. A vague period, indeed, which the history primers generally shunt with the remark that the inhabitants "stained their bodies blue with a plant called woad, and lived upon the produce of the chase." These words come back to me in a curious manner when I think of ancient Britain. They must have crystallised in my brain in the far-off period when primers and petticoats were part of my daily lot. It is difficult for the Londoner, or one who knows the great city well, to imagine such a state of things as must have existed a few centuries before the foundation of Christianity. The ground now covered with stately buildings was in remote ages trodden by the feet of the elephant, rhinoceros, and other huge beasts

which are now relegated to the Zoological Gardens. This is no mere theory, for the bones of these and other creatures were unearthed at Charing Cross only a short time ago when the foundations of Messrs. Drummond's bank were being laid. Then savage men come upon the scene, who fixed their rude dwellings, if dwellings they can be called, on this spot which we now call London. They lived out their simple lives, and passed away into silence, leaving no records behind them, save the rough flint implements which served them as weapons for hunting and for fighting.

Then comes the Roman period. Six yards below the present level of the City streets lies Roman London. At different times there have been discovered at this depth Roman tombs, tessellated pavements, lamps, vases, and coins, as well as figures representing the gods which were worshipped by the conquering race. Of Roman London we have records both in the form of relics found and written documents. We know that the City was but little larger than Hyde Park—that is to say, about one mile long by half-a-mile in breadth. The line of its boundary wall is well known, and is figured on maps which have been preserved to us. In this wall were the various gates of the City, whose names are as familiar to us as they were of yore to the Roman inhabitants. Ludgate, Newgate, Aldersgate, Cripplegate, Moorgate, and Bishopsgate are to modern Londoners as household words. Four of these gates give their names to railway-stations, where crowds of human beings are daily carried along by the mighty power of steam, little thinking of the sandalled feet of those who trod the same ground, at about the same low level, a couple of thousand years ago.

Such portions of the old wall of London as are visible show the firm construction and honest work of those old builders, and agree with other specimens of Roman work in all parts of the country. Rough stones, joined together with mortar as hard as adamant, form the basis of the building, but at regular intervals of about two feet come layers of red tiles or bricks. These walls, after burial and exposure to all the changes of our variable climate, are to-day one thousand times stronger than those of the jerry-built dwellings which have been erected all round the suburbs within the last few years. Watch the man pulling down the brick wall of a comparatively modern house to make room for new work. He stands on the tottering mass and inserts his pick between the bricks some twenty inches below his feet; a few tender touches and a mass of twenty or thirty bricks is separated from the rest to presently fall with a thud to the street below. But let the same man try to pull down a piece of this old Roman work. Why,



his pick would break against the hard mass like a reed, or bend like one of the bayonets supplied to our troops. The Roman work was built to endure; the jerry-built houses were made to sell—so, too, alas! were the British bayonets.

Coming to Saxon times, we learn little about London, except that the Cathedral of St. Paul's was founded by Ethelbert in the year 610. And Bede, who mentions this, describes the City as "an emporium of many nations, who arrived thither by land and sea." Under Edward the Confessor, who built the Palace and noble Abbey of Westminster, London grew greatly in importance, until the coming of the Conqueror, whose

numbers. But what the Virgin Queen could not do was accomplished in 1665 by the plague, which carried off sixty-eight thousand persons, and the fire which followed, and which destroyed fourteen thousand houses. But the big City, in spite of these disasters, continued to grow bigger. The view just mentioned reminds us that the principal buildings are the same now as they were then. The Tower is still the fortress, and St. Paul's and the Abbey are still the principal churches; but it is not the same St. Paul's. The original was destroyed in the great fire, and Sir Christopher Wren's masterpiece stands on the same site. But one feature of old London has disappeared for ever. Those



Fig. 1.—The Yard of the White Hart Inn.

approach was at first resisted, but who was ultimately crowned at the Confessor's tomb.

The earliest known view of London represents the City as it appeared in 1540, from which we learn that it had not then much increased in size beyond its early boundaries. Outside many of the gates all was still open country, and many will regret that a broad band of green fields was not preserved for health's sake round the City walls. A little later on Queen Elizabeth prohibited people from building houses within three miles of the City gates. This was not for sanitary reasons, but because she dreaded the power of the increasing citizens, and did what she could to check their

streamlets or tributaries of the Thames, which must have given the streets a picturesque character of their own, have gone for ever. They are now underground sewers. The Fleet, the Eyebourne, the Oldbourne, and the Wallbrook are now remembered only by the names which they have given to certain crowded thoroughfares. Still, with all the improving away of which London has been the unfortunate subject—unfortunate so far as artistic matters are concerned—there remained until quite recent years many places and spots of interest of which it was desirable to preserve the likeness by the correct eye of the photographic camera.



One class of buildings has almost become obliterated. We mean those galleried inns which have figured in so many pictures. Where are they now? We believe that one or two only remain. The most celebrated of all has long ago disappeared. The Tabard, from which the Canterbury pilgrims started on their long journey, disappeared two hundred years ago. How fond Charles Dickens was of these old places, many of which have been demolished since he wrote the following words:—

There are in London several old inns, once the headquarters of celebrated coaches in the days when coaches

improvement and the encroachments of private speculation. Great, rambling, queer old places they are, with galleries, and passages, and staircases wide enough and antiquated enough to furnish materials for a hundred ghost stories, supposing we should ever be reduced to the lamentable necessity of inventing any, and that the world should exist long enough to exhaust the innumerable veracious legends connected with old London-bridge, and its adjacent neighbourhood on the Surrey side.

The genial writer goes on to tell us that it was in the yard of one of these inns that one morning a man was busily employed in brushing the dirt off a pair of boots. The man was the immortal Sam Weller, whose first meeting with Mr.



Fig. 2.—The Yard of the Oxford Arms Inn.

performed their journeys in a graver and more solemn manner than they do in these times; but which have now degenerated into little more than the abiding and booking places of country waggons. The reader would look in vain for any of these ancient hostelries among the Golden Crosses and Bull and Mouths, which rear their stately fronts in the improved streets of London. If he would light upon any of these old places he must direct his steps to the obscurer quarters of the town; and there, in some secluded nooks, he will find several, still standing with a kind of gloomy sturdiness, amidst the modern innovations which surround them.

In the Borough especially there still remain some half-dozen old inns which have preserved their external features unchanged, and which have escaped alike the rage for public

Pickwick occurred at this place. Of course, when Dickens wrote the "Pickwick Papers" the White Hart still possessed its galleries, and some other remains of its former greatness; but at the time Mr. Dixon photographed it for the society, it had indeed sunk to a low ebb. Our picture (Fig. 1) is copied from his photograph.

But Mr. Dixon was more fortunate in depicting some other inns. The Oxford Arms, which stood until the year 1878 in Warwick-lane, just under the shadow of St. Paul's Cathedral, is one of these. He has taken of it a series of most inte-



resting pictures, which bring before us in a most striking manner the outward appearance of one of those ancient hostleries. From the series we select one for reproduction—Fig. 2. Not much seems to be known about this inn. From the very carefully-edited notes which accompany the photographs, we learn that it certainly existed before the great fire. This is proved by an advertisement in the *London Gazette* for 1672, which runs thus: "These are to give notice that Edward Bartlett, Oxford carrier, hath removed his inn in London from the Swan at Holborn Bridge, to the Oxford Arms in Warwick-lane, where he did inn before

saddle rode into or out of the yard, but poor players and mountebanks set up their stage for the entertainment of spectators, who hung over the galleries or looked from their rooms." The old inns have been swept away by the railways. Travellers now find accommodation in those immense hotels which have lately risen in all parts of the city, and many of which belong to the railway companies. But there are many who sigh for the more cosy and homely surroundings of the old-fashioned comfortable inn.

We have only space this month for one more picture, but we hope to have another opportunity of resuming this subject.

Fig. 3 represents Cloth Fair. It seems surprising that such tumble-down, inflammable houses should have remained standing so long. Cloth Fair is close to St. Bartholomew's Church, Smithfield—a neighbourhood full of pleasant, as well as of terrible, associations. This Cloth Fair is the sole remaining relic of the great City carnival, known as Bartholomew Fair. Originally established for useful purposes of trade, it declined, during its existence of seven centuries and a half, into regular saturnalia; but only perished by lingering death in 1855.



Fig. 3.—Cloth Fair.

the fire, his coaches and waggons going forth on their usual days, Mondays, Wednesdays, and Fridays. He hath also a hearse, with all things convenient to carry a corps to any part of England." The inn was within the area of the fire, in which it no doubt perished, being rebuilt, however, a few years later on the old plan. A few years before its demolition, a writer in the *Athenæum*, referring to this inn, says: "Despite the confusion, the dirt, and the decay, he who stands in the yard of this ancient inn may get an excellent idea of what it was like in the days of its prosperity, when not only travellers in coach or

## HOW TO AVOID SNARES AND PITFALLS IN PHOTOGRAPHY.

### IV.

BY DR. G. LINDSAY JOHNSON.

**D**UST.—Nothing is more difficult to guard against than this; it seems to penetrate everything, and especially when travelling on the Continent, I have been greatly annoyed

by the quantities of fine impalpable sand, which in some mysterious manner seems to work its way into every possible and impossible corner; and for this reason I have found those rubber-cloth covers mentioned in the last paper of great service. A little dust on the lens is of no consequence, as each particle only stops one bundle of rays out of many thousands which meet in a point on the plate. But the same grain of dust on the film during exposure is quite another matter; in this case it so completely screens the light from the particle of silver bromide behind it, that, after development and fixation, a clean transparent "pinhole" of gelatine remains to mark its site. After exposure, dust is of small consequence, as it is usually much too fine to scratch the films or cause chemical changes, even when the plates



are packed face to face, without any tissue-paper between them, and as soon as the plate is flooded with developer, all the dust is washed off immediately.

It is a good plan, especially after a dusty journey, to turn the covers inside out, and give them a thorough brushing. When uncovering the double-backs, do not drop the cases on the ground, or some dust may find its way inside, and then work itself into the slide at its leisure.

In the dark room, when filling your backs, dust them and the plates with a soft brush; for this purpose the best one to use is a flat camel's hair-brush, about  $2\frac{1}{2}$  inches in breadth, such as artist's colourmen recommend for spreading washes in water-colour painting. None of the above precautions should be omitted if you wish to make certain of a clean negative.

There are other causes for pinholes. Some makers, in their instructions, advise you to soak the plate in water for a few seconds before applying the developer, or, at least, to flood the plate itself with pyro solution only before pouring it off, and adding the bromide and alkali. This is recommended with a view of causing the developer to flow evenly, and to prevent the formation of islands of dry film. I frequently noticed a peculiar rash on the negative, which I was persuaded could not be due to dust or fault in the film. It consisted of a group of discrete, circular pinholes. Now these pinholes were quite different from those caused by dust, being very small, quite circular and uniform in size, and, when examined with a magnifier, exhibiting an opalescent surface and no shadow; whereas the dust-spots were irregular in contour, of various sizes, and, under a low power, showing quite clear glass, and with sometimes a shadow. It was a long time before I traced the mischief to the above mode of developing. I have proved that a good way to avoid these pinholes is to flood the plate with *plenty* of solution as soon as placed in the dish. If you have to pour it away instantly, add another measure of solution (or plain water) *before the pinholes have time to form*.

DAMP.—There is something mysterious about the effect of damp on plates. It never acts in a uniform straightforward manner, so that you can foretell what will happen, but there is a glorious uncertainty about its action. Sometimes after development it shows its presence in the form of large patches, sometimes as water-marks, at other times as spots with halos round them. Very frequently it leaves no mark whatever. I once took a number of views along the Norwegian coast from Christiania to the North Cape, and two or three dozen plates got spoiled by the damp salt-air. The damage took the form of three or four light bands running in parallel lines along one end of the negative, exactly where the folds of the cloth

occur in the draw-board of the slide. These bands were evidently not due to light having penetrated, as there was no sign of fog, the bands being clearer than the rest of the picture, and printed as dark streaks. I have not yet found a satisfactory explanation of the cause. Perhaps the cloth attracts the salt air more at this point, and being impregnated with it acts on the bromide of silver, whereby a partial double decomposition takes place, the chlorine taking the place of some of the molecules of bromine or iodine in the gelatine, and as silver chloride is far less sensitive to light than the other haloid compounds it might account for it. Whatever be the explanation, the fact remains that those plates which came in contact with sea-air were damaged, and all the plates (mostly from the same batch) which only travelled inland were unaffected.

As to the packing and carrying of plates, everyone you meet will give you different advice. One maker recommends strong cardboard boxes, fitted with paper grooves; another says that the plates should be packed as close as possible (in batches of six), with a piece of prepared tissue-paper over each film, and the packet thus formed to be wrapped in two thicknesses of brown-paper and placed in a thin cardboard shell. A third provides the enquirer with an interleaved hypo-less book, which holds the slides like flies in an angler's pocket-case. Captain Abney mentions favourably Mr. England's device for keeping the films from actual contact by bits of cardboard or wood, placed alternately at each end of the plates, and one could mention several other devices. But, whatever the method, all agree on one point, viz., that it is necessary to keep the films from touching. I followed in the same track until the paper I put between happened on one occasion to get damp, and several interesting negatives were spoilt in consequence. Since then I have adopted the plan of packing all my plates (both before and after exposure) face to face, with nothing between the films, and have never had any reason to regret having done so. My plan is as follows:—I place an extra piece of orange glass in front of the lamp, and, having dusted the films, place the slides face to face in batches of "fours" and "half-dozens." Then I wrap each batch in two thicknesses of common orange wrapping-paper (which has previously been cut to the required size), and fold the packet as tightly as possible, so as to form a solid block. Then taking an Edward's cardboard-box, I remove all the grooves from it with a knife, and, after dusting, fill the now empty box with as many packets of sixes and fours as it will hold. A twelve-grooved box will hold tightly twenty-four slides, arranged in two "sixes" and three "fours" (packets), or, with "comfort," four packets of "six." When all the



boxes are filled, I paste a strip of orange paper round the joint of each box, and the result is a solid mass of glass plates, occupying less than half the space that they would otherwise do. My reason for packing the slides in sixes and fours is twofold. First, by a process of selection one can make them fit more tightly, and so lessen the chance of shaking; and secondly, one is better able to fill the slides without a "remainder," and so obviate the necessity of opening a fresh packet. When the plates are packed in this way, the danger of their getting broken is greatly diminished; and, moreover, I find that in repacking them this method is more expeditious, the grooves being difficult to hit upon in a dim light. After the box has been once opened, I keep the lid in its place with a broad elastic band until all the plates have been exposed and repacked, and then seal the box up with a fresh piece of orange paper, which can now be put on one side until I have leisure to develope.

(To be continued.)

## PHOTOGRAPHIC PROCESSES FOR BOOK ILLUSTRATION.

BY JAMES SHIRLEY HODSON.



HERE is an historical connection between photography and engraving which is highly significant as well as interesting; significant as indicating one of the most important uses of photography, and interesting to those engaged in tracing the gradual development of the science.

In the early correspondence which took place between the joint-discoverers of photography—Joseph Niepce and Louis Daguerre—the former, in allusion to the result of his discovery, speaks of "having perfected in an important degree his process of *engraving upon metal*." At least one of these workers in this particular field of science pursued his researches through the earlier art of lithography in the hope of attaining some new means of readily multiplying pictorial reproductions of drawings and objects. Isidore Niepce, the son of the inventor, who subsequently contributed materially to the development of the science, thus described his father's work:—

"In 1813, my father made some attempts at engraving and reproducing drawings by lithography, which had then been recently introduced into France, and which attracted his admiration. Some broken stones, intended for repairing the road, and which came from the quarries of Chagny, seemed to him to be suited, from the fineness of their grain, to be usefully employed in lithography. We chose some of the largest of

these stones, and my father had them polished by a marble-worker of Châlons. I then made various drawings on them, which my father coated with a varnish he had prepared; he then etched them by means of an acid. . . . My father afterwards replaced these stones by polished tin plates, which he coated with various varnishes, then placed on them the drawings, which he had previously varnished to render them transparent, and exposed the whole to the action of light."

This passage unquestionably contains the germ of the work which now goes by the name of photo-etching, and clearly proves that some means of engraving was the aim of those researches which led to the discovery of photography.

The desire of adding to the methods of book illustration already in existence has resulted in a variety of processes which are now being extensively and satisfactorily employed; while new processes, or improvements of former ones, are almost daily being brought forward. It will be desirable to give some practical information on the most important of these processes, by way of showing what has already been accomplished, and also as indicating the direction in which experiment and research may still be usefully pursued. "There is nothing new under the sun," has come to be taken as a truism, but any fresh combination of old ideas and appliances producing new results is justly entitled to be considered an invention. Invention has, indeed, ever been accomplished piecemeal, usually by some "happy thought," which has been gradually improved and perfected, or "licked into practical shape," until absolutely marvellous results have been obtained. It is scarcely necessary to point the moral by alluding to the progressive improvements which evolved the steam-engine from the mechanic's tea-kettle, or the complicated power-loom from the weaver's first crude domestic contrivance for knitting. The Darwinian theory of evolution is equally applicable to mechanics as to natural philosophy. The discoveries of Niepce and Daguerre required to be followed up by the successive improvements of Talbot, Claudet, and many others before they could assume the practical utility which they now possess.

The most popular of the various methods of utilising photography for the purposes of book-illustration is that designated photo-zincography—a term often applied indiscriminately to reproductions intended for printing at the typographic or the lithographic press. Properly speaking, the former should be distinguished by the title of photo-typo-zincography. Zincography is another form of the same process, where the agency of photography is not employed.

*Zincography* implies the substitution of a zinc-plate in place of the stone used in lithography. Drawings may be made either in lithographic ink



or chalk, or may be transferred. The plate is then "rolled up" and impressions taken at a lithographic-press.

In *photo-zincography* and *photo-lithography*, photography is employed in place of drawing by the artist on the plate or stone. The surface of the stone is rendered sensitive to light by being coated with albumen and bichromate of potash. A glass photographic negative is then brought into contact with the prepared surface of the stone and submitted to the action of light. The stone, with its design thus photographically produced on its surface, is then prepared for printing at a lithographic-press.

picture which might be made by the acid. There is a considerable tendency in the biting not only to undermine the lines of the design, thus rendering them rotten, but also to destroy the lines altogether. To obviate this tendency, the acid bath is kept constantly in motion. The bath or trough containing the acid is usually furnished with rockers underneath, so that a gentle rocking motion may be communicated to the bath while the biting is proceeding. Another objection to a stagnant condition of the bath arises from the fact that, as the acid becomes charged with the metal which has been dissolved, it is apt to be re-deposited upon other portions of the plate, to the



"Diana Reposing" (*see next page*).

*Typo-zincography* is the term given to the process of preparing a block for printing typographically, the whites or non-printing parts being removed by biting with acid. The design or drawing may be made in lithographic ink or chalk, upon transfer paper or grained paper, and laid down upon a polished zinc plate. The plate, with the design upon its surface, is first "rolled up," and then placed in a bath of dilute nitric-acid until the picture is in relief to about the depth of one-sixteenth of an inch. The material usually employed for rolling up is a mixture of ordinary lithographic ink and Brunswick black, and this effectually resists the action of the acid. From time to time, as the work proceeds, it will be necessary to renew the rolling up, for the purpose of preventing any inroads upon the lines of the

manifest detriment of the work. A feather may be advantageously passed over the portions of the plate where this redeposit is likely to occur, which will also enable the operator to examine the work as it progresses. Powdered resin, sprinkled on the surface of the plate, and the plate slightly heated, is another precaution against the acid undermining the lines. The liquefied resin runs down the sides of the lines, and resists the acid in those parts. The strength of the acid to be employed can only be correctly ascertained by experience; but, generally speaking, a more diluted acid is preferable for the finer portions of the work, and for the first biting, than for the subsequent stages of the operation.

To M. Gillot, of Paris, is due the credit of the discovery and practical application of the



biting-up process, which dates from 1856, when he submitted the particulars of his method, under its first title of "Gravure Panicographique," to the "Société d'Encouragement pour l'Industrie Nationale." It was subsequently deemed prudent, in consequence of the prejudice created by the French engravers, to alter the name to "Gillotage," by which name it is still known in Paris, where MM. Gillot & Fils possess an extensive establishment. There are now several other houses in the French capital devoted to this work, among whom MM. Bernard & Cie., MM. C. G. Petit & Cie., MM. Lemer cier & Cie. are conspicuous for excellence.

*Photo-typo-zincography* is similar in its results to Typo-zincography, with this difference, that in this case the drawings are transferred to the plate through the agency of photography. Whenever the design or drawing is to be reproduced to a different scale from the original, the employment of the camera is a necessity. Although there are other means by which an enlargement or reduction can be made by mechanical arrangements, the use of the camera produces the most satisfactory results and with the greater facility. For these enlarged or reduced reproductions, M. Gillot adopts the wet collodion process. The negative is printed photographically upon a zinc plate previously sensitised. M. Davanne's account of the process describes the plate as being coated with a solution of four parts of *bitume de Judée* dissolved in one hundred parts of benzine. After drying, the negative is brought into contact with the plate, and both are exposed to the action of light. The required exposure having been accomplished, the plate is cleansed by washing in spirits of turpentine, which discharges all the bitumen which has not been rendered insoluble by the action of the light. The method adopted by Mr. Hentschell, of London, for the like purpose differs somewhat from that adopted by the Paris establishment. The photographic negative obtained in the ordinary way is placed in contact with a specially-prepared carbon paper sensitized by bichromate of potash. This carbon print is laid face downwards, and firmly attached to a polished zinc plate, and is then washed in tepid water until the paper and the still soluble portions of the carbon are removed, leaving only that portion which carries the drawing, and which, by the action of light, has been rendered insoluble. In this condition the plate is introduced to the acid bath in the ordinary way.

As a specimen of the application of this process to the reproduction of an old engraving in a reduced size, the engraving on page 91 is introduced by the courtesy of the editor of the *Art Journal*, as an example of book-illustration. The subject is "Diana Reposing," an engraving by

Cornelius Bloemart (1603-1680), after a painting by Petrus Berettinus Corton (1596-1669); and the reproduction has been made by Mr. A. Hentschell, of the Direct-Photo-Engraving Company. The size of the original plate, in the possession of the writer, is 13½ in. by 6½ in.

There still remains to be described the methods by which a photographic picture produced in half tint can be made into a relief-block capable of being printed at the typographic press. This, however, must be reserved for another paper.

The methods of zincography above described offer no insuperable difficulties to the intelligent photographer. The cheap rate, however, at which blocks can be produced by the various photo-etchers renders it scarcely worth while for a novice to undertake the experiment. At the same time, a theoretical knowledge of the work will be found useful as indicating the character of negatives most desirable for reproduction by such means; and when the requirements of photo-etching are understood, the photographer is the better able to select and provide suitable subjects.

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## GRINDING GLASS FOR THE FOCUSsing-SCREEN.

BY "DEXTER."



AMONG the minor ills of photographic life there is, perhaps, nothing more annoying than any accident to the camera which is serious enough to put it for a time *hors de combat*. A lost tripod screw is an episode which approaches that dangerous frontier that separates polite language from words of a more vigorous and startling nature; but a tripod screw can be extemporised with any bit of wood—a cedar pencil to wit. The real height of annoyance is felt when it is discovered that the focussing-glass of the camera is rent in twain—more generally several twains. The pressure of a strap, an accidental fall, the well-known lady who, when nearly all the seats in a railway-carriage are vacant, *will* sit upon your package—any of these causes may suffice to do the mischief. Of course, the broken glass is not suspected until the photographer is far away from home, and is only discovered when, with serene feelings, he unlimbers his gun for the first shot. If the glass is not utterly smashed, that is to say, if only a bit of it can be induced by turning and twisting to fix itself in the right place, the work may go on—not very comfortably it is true, but still a fraction of the glass is better than none, and the worker must do his best with it.

In cases of utter smash, some substitute for the glass must be found. There may be a local



glazier who may have a bit of ground-glass, and who may be somewhere within half a mile of his dwelling at the time when you want him. But it is far more likely to happen that there is not, and that you must shift for yourself. If you can get a piece of tissue, or other thin paper, and a little gum, you can soon make a screen for yourself; but take care that it starts from the rebate where the glass fits in, and not from the outside of the wooden frame, or all your pictures will be out of focus. Another plan which answers at a pinch is to sacrifice one of the dry plates which you are carrying. Do not expose it to daylight more than you can help, and it will only gradually darken. Most plates are transparent enough to focus upon. If the sample which you are using should not be so, scrape or wash off its gelatine coating, and gum a piece of tissue-paper upon it. If you are within hail of a resident photographer, he will most likely be able to supply you with a piece of glass and with the means of cutting it. He will also let you have a little of his negative varnish. This must be applied to the glass in the ordinary way, except that no heat must be used. This will cause the varnish to *chill*, and you will then have a very good substitute for ground-glass.

Even if the accident should happen when you are at home, it is by no means an easy matter to purchase a piece of glass that is fine enough in its texture for focussing purposes. The ground-glass in ordinary use, such as household glaziers employ, has far too coarse a surface. At the photographic dealers a special kind of finely-ground glass is sold for cameras. But in case the dealer is not within convenient reach, let me give plain directions whereby the material can be ground of the finest quality by the operator himself.

First of all, procure a piece of glass which is both flat and perfectly free from bubbles and other flaws. See, also, that its thickness agrees with the depth of the rebate in the frame destined for its reception. Be careful, too, to cut it to the correct size at this stage of the proceedings, so as to avoid all risk of mistake in this direction after it has been ground. The glass is now fixed on a table or board by means of four pieces of wood, nailed on the board or table so as to clip its four sides. These wooden pieces must not be thicker than the glass itself. Now procure a piece of plate-glass, measuring about 3 inches square, to act as a grinder. Failing this, a piece of ordinary sheet-glass can be employed; but, as it will not be thick enough to afford a proper hold for the fingers, it should have attached to it a pneumatic india-rubber plateholder to serve as a handle.

Now take some flour emery and mix it into a thin cream with water. Put some of this on the glass, which you have fixed to the table, and place the grinder above it; rub the latter over the former

with a steady circular motion, taking care to cover every part in turn. This rubbing should be continued for about ten minutes, adding water if the two surfaces seem inclined to stick together too much, and occasionally collecting, with a knife-blade, the mud which oozes out between them, and putting it once more in the centre of the under glass. At the end of the time named the glass can be lifted from the table, held under the tap for a few seconds so as to clean it, and carefully examined by transmitted light. It will most probably show a fine grain, except in certain parts which remain clear as before. These clear portions are depressions in the surface of the glass, which the emery has failed to reach. The grinding operation must be repeated as before until on examination these clear places have quite gone. The ultimate result will be a sheet of very finely-grained glass. It can be easily put in its place in the camera by unscrewing the little brass corner-pieces on the focussing-frame. The entire operation is not in any way difficult; it merely requires care. The worker will feel both satisfied with the product of his labour, and will have the further satisfaction of feeling that he knows how to remedy an accident of common occurrence—a broken focussing-glass.

## HOW I PHOTOGRAPHED THE COMET OF 1882.

BY G. T. FERNEYHOUGH (NATAL).



ON Monday, Oct. 2, 1882, I received a telegram from an old scientific friend of mine—a Colonel Bowker, F.R.G.S.—which read, “Photograph comet at four a.m. to-morrow.” Up to the receipt of this telegram, I had not seen this wonderful phenomenon of the celestial world, though I had heard of it; but as no one had made any special remarks as to its size and beauty, and the local prints had only referred to it as being visible at a certain time, I had not troubled to rise in the early morning, considering that it was only one of those feeble and distant comets of which we had had several; but this telegram from my old friend placed a different aspect upon it, as I knew he would not have mentioned it unless it possessed sufficient actinic power to impress an image.

Tuesday morning saw me up with camera and a double-slide charged, and a 10 in. by 12 in. Dalmeyer’s rectilinear. When I emerged from my front-door on to the verandah, the tail of the comet was just visible above the housetops opposite. To put on my slippers, shoulder my camera, and proceed with a friend to the top of the street, where there was an open space, took as little time as to write



this, as neither of us stayed to put on other clothes than those we had on when we got out of bed. (In parenthesis, I would remark that on our way up the street nearly every verandah contained its spectators, similarly clad, male and female.)

It did not take me long to adjust the camera and focus the image; but in focussing, I soon discovered that the movement of the comet, or, to be correct, the movement of the earth, was much greater than it appeared, and to make anything

of it an equatorial movement was absolutely necessary; this I had not, and was not likely to have. I judged the exposure to be some thirty-five minutes, so I put in a plate and exposed thirty minutes. By the time we had had a cup of coffee dawn appeared, and we watched the comet gradually wane. The development of the plate confirmed my ideas that in that time, thirty minutes, the comet would be off the plate. It was there, the nucleus a thin segmentary line. I sat down and had a long smoke whilst breakfast was being made, and came to two conclusions—or rather three. *First*, as a photographer pure and simple, that whatever I might get would simply be as the eye sees it, with its inclination of 45 degrees, and not as the equatorial corrected telescope would give it, perpendicular to the equator; therefore,

as a scientific picture, it would be useless; consequently, I must aim at producing a photograph perfect only as regards its being a correct delineation of the celestial wonder, as the mass regard it and see it. *Secondly*, that I must sacrifice size to speed of exposure, and instead of an outdoor lens, use a studio cabinet combination. And it was here that common sense came to my aid, inasmuch as it being night—so to speak dark—and the comet the only actinic object, it did not

matter about the corners of the plate being cut off by the non-covering power of the lens, as they would blend with the dark sky, and it is to this part of my reasoning-out that I mainly owe my success, as my “2 B” gave me a fully-exposed picture in seven minutes. *Thirdly*, that without some arrangement to compensate for the movement of the earth (or, visibly, the rising of the object), and also the slight lateral motion of the comet itself, the comet could not be got.

These three things determined upon, I had only to think through—*thirdly*. The day's post brought a letter from my friend, explaining his telegram, to the effect that the great photographer at Durban had made many trials and failed, and had issued an ultimatum that no picture of any kind could be got without an equatorial movement and telescope. This enabled me to take the comet. “Can't!” is not in my dictionary where an object is visible, and nothing is impossible in logic but “a straight stick without two ends” and “two hills without a valley.” And as “Necessity is the mother of invention,” so it was in this case. An equatorial movement was a necessity. Failing that, I must have something in its place to answer the same end, and

before night the thing was done. To make a long explanation short, I made for my camera a stand on four legs, firmly bound; the top about 18 in. wide by 3 ft. long, and sufficiently high from the ground for me to have my eyes on a level with the centre of the ground-glass. On the top of this table was hinged two other boards, to carry the camera, as shown in the rough sketch. T is the table; H, H, are hinges; A, is a board hinged to table; B, a board that carries the camera hinged to A; D is a rigid

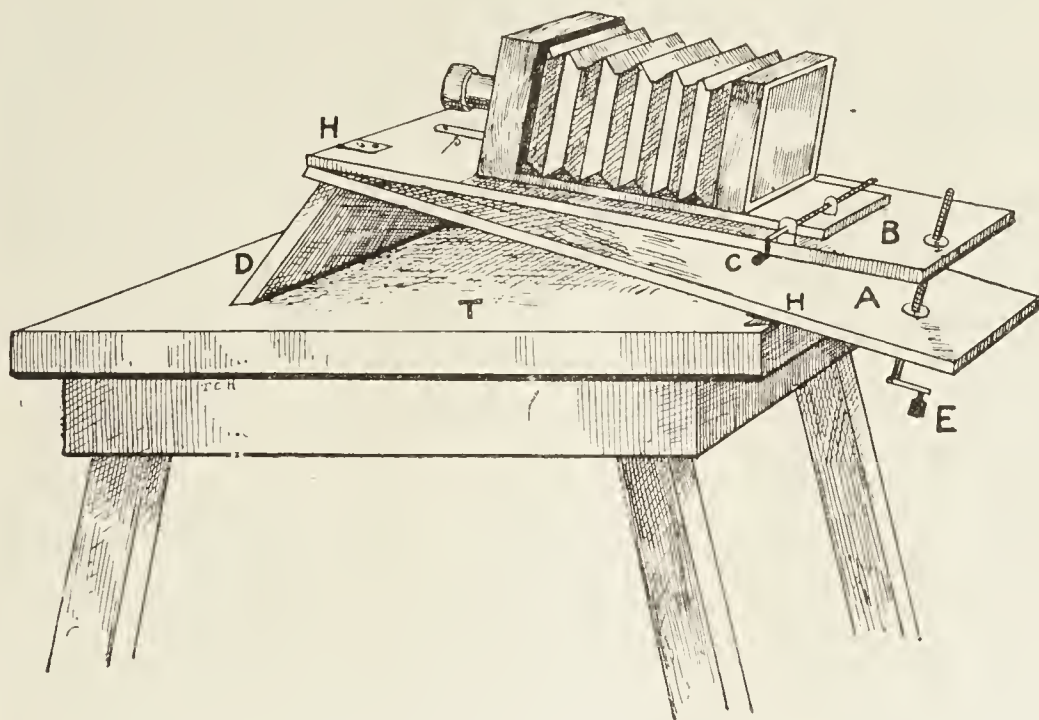


The Comet of 1882.



prop to raise up the board, A, to the proper elevation; E is a screw, so fixed as to raise or lower the board, B, and compensate for the earth's movement or the rising of the comet. C is a similar screw to E, fixed so as to either move the camera to the right or left of centre. This compensates for the lateral movement, the camera being movable from a pin (*p*) in front of it on the board B, exactly working on the axis of the lens. I also had two shades for the front of the lens, moved by a pendulum, to shut off the lower part whilst the comet was exposed, and then to shut off the comet whilst the housetops were outlined by the coming dawn, otherwise the movement that compensated for the movement of the comet would have blurred the housetops. The next difficulty that presented itself was (and herein lies the secret), how was I to know how much to turn my com-

and with my friend to uncap and cap and work the shades, commenced operations by first focussing the image on the ground-glass, a little lower on the plate than where I wanted it to be. Everything being sharp and ready, the lens was capped, the slide inserted, and the shutter drawn. We waited for the proper moment, when the comet seemed to burst into flame, and uncapped; and a turn of the screw brought the nucleus of the object behind a small bit of black paper, with a pinhole in the centre, that was already gummed to the back of the dry plate, and the instant I found the pinhole was not illuminated, the screws were worked until it was again bright. Thus it went on for seven minutes, when the shades in front of the lens were reversed, and the coming dawn allowed another five minutes.



Arrangement of Camera for Photographing the Comet.

pensating-screws? This was a poser, and necessitated as the only solution ocular demonstration, by trial and accurate marking. Thus Wednesday morning was set apart for this work. Scarcely had I tried my screws and found that I could keep the comet all but stationary on the ground-glass, than the idea occurred to me, why not do the same on the plate itself; a cloth so arranged over the camera and my head would keep any light away—though there was none really to injure the plate. I determined to try this, and on Thursday morning I brought my two single slides, charged, but with the plates fastened in the slides with postage-stamp paper, so that when the backs were removed they would not fall out. I rigged up a chair to sit in, with a rest for my head, so that I could be comfortable,

when, as I say, the comet seemed to obtain a greater brilliancy, which lasted some ten minutes.

As I have before stated, what I aimed at was not a scientific (astronomically speaking) production, but a photograph as a commercial speculation, and it was for this purpose I included in the picture the house-tops, as they assisted the picture, inasmuch as they—the chimneys and houses—gave a character and a relative comparison as to size to the comet.

THE CAMERA (price 6d.) is ready for issue to the public on the 1st of each month. The Publisher will feel obliged for information of any difficulty that may be experienced in obtaining the magazine regularly.

I may add in conclusion that only one photograph could be obtained at one time, as the comet was really only in a condition for taking (with instruments such as a photographer possesses, without a very prolonged exposure) just immediately before the first streak of dawn, when it seemed as though the sun imparted in some way a greater volume of light to the rival beauty which was so soon to pale before the majesty of the king of day. This is no theory, as I have one taken in advance of this time with double the exposure; which, though all sharp and perfect, is a mere nothing—a streak, so to speak, of the one taken twenty minutes after,



## "NOVELTY" IN PORTRAITURE.

BY JOSEPH HARRIS.



It is, perchance, a somewhat humiliating confession to make, but the more profound the meditation the deeper sinks the truth into our spirit, that man has much, very much, in common with the monkey—his faculty of imitation is so wonderfully developed!

We can recognise, we can make allowance for, that inordinate craze which exists in our midst in every department of art, science, and manufacture, to produce a novelty, a something new; to hit, if possible, upon an idea or a theme which has not occurred to other brains than our own. Should the unexpected happen, should this fortuitous discovery or invention bear fruit, so surely will the multitude which so closely presses in the race either slavishly copy or else servilely imitate that "poor thing," that pet creation of our mind, that its constant iteration will at length pall upon the senses of its author.

Take, as an example, the humble "photographic portrait." Now, the "photographic portrait," be it observed, is a totally different article from the *portrait* created by the artist wielding either brush or camera. The *portrait* is a work of *fine art*, it possesses a certain ideality, it is not a mere representation of so much flesh; the material part of our nature is faithfully portrayed, but that materialism, to use a theological expression, has been refined by the hand of the artist, by the genius of the man of skill. The portrait is the reflex of so much matter, plus that amount of mind which raises the subject from the commonplace to the beautiful. And the only means whereby the beautiful in art can be realised and understood is by the *cultivation of the eye through the hand*.

To return to the photographic portrait. This is the exclusive work of that man of many trades—haircutter, picture-frame maker, newsvendor, shoemaker, and—photographic artist. When a deserving individual has failed in many walks of life he generally finishes by becoming "super" in a theatre, or else a "photographic artist." No vast amount of capital is necessary to procure a "cheap set;" dry plates are so handy, and it is such a simple matter to shoot them off, by aid of the systematic tables of exposure!

And this is the sort of man who wanders through life dreaming of "novelties" in portraiture. He has tried his 'prentice hand with his female *clientèle* reclining in hammocks, he is familiar with its pose (?) toying with an Indian palm-leaf, price twopence each, and he yearns for something new, if only a Queen Anne staircase, very cheap and

effective. But the worse part of the business is that the majority of people in their every-day life do not recline in hammocks, they do not amuse themselves with palm-leaves, neither do they stand near Queen Anne staircases, and its consequence is that photographic representations of frail humanity taken under circumstances which amount to a departure from the habits, manners, and customs of every-day life are only so many additions to the very long list of photographic absurdities and photographic anomalies.

Now if the monkey went in for the exposure of dry plates he could not well improve on this imitative action on part of the "higher organism."

There are journals published in this enlightened country which professedly record the progress of photography. And this is how they do it. In all seriousness, a new departure is suggested as worthy to be followed, and the new departure which is held up for imitation is neither more nor less than to photograph Mr. Jones in Burgomaster costume, because—*of the shape of his head!* Mr. Brown is to be a seventeenth-century diplomatist; Mr. Robinson an ascetic crusader. There is not the smallest objection, from an artistic point of view, to the portraying of individuals of the nineteenth century in the habiliments of past ages, especially if they are fresh from a costume ball and have not forgotten their latch-keys. When *will* people learn that a true artist shuns all incongruity!

What shook the stage, and made the people stare?  
Cato's long wig, peruke, and flowing hair.

The only "novelty" which can be tolerated in portraiture is the novelty of so performing the work that it shall be above criticism. But to achieve this result there is no necessity that countless anachronisms shall be perpetrated "to show what can be done with lens and camera," when the owner of that lens and camera has lost his head in a brown study after something new in portraits. It is to be lamented that so many minds, or rather the remains of what were minds, are incessantly engaged in the dismal pursuit of endeavouring to discover that "novelty" which does not and cannot exist. New accessories may be devised, *spécialité* backgrounds may be painted, prints may be supplied with the highest polish or with no polish at all, and yet not one of these conditions implies a something new in portraiture, for the very good reason that at the present writing there is nothing new in the configuration of the heads of the present generation over those of ages long since past. A portrait is but the representation of some individual head or figure, and until our organism reaches a higher or descends to a lower stage of development, there will be no opportunity for display of the "latest novelty" in evolution. Take them either singly or collectively,



the heads of our men and women afford ample scope for the exercise of the highest artistic power in their portrayal, either by paint and brush or by chemicals and camera. Our neighbour may be the possessor of a bullet-shaped head, but that is not sufficient reason why he should be photographed as a "Roundhead" or a "Crobbie;" his friends will not recognise him in the garb of other days. The value of a portrait consists in its truthfulness, in its consistency, and in its exaltation of the wonderful beauty in nature.

If the rage for "imitation" of the masters be pursued to its logical extremity, why not make all the "ascetic" individuals, all the pale-faced interesting items of humanity, saints at once, by depicting them in robes of flowing white with glittering halos adorning their unruffled brows? There is a difficulty here anent the wings—neither those of the pigeon nor the common *gallus gallinaceus* are sufficiently large to enable the biped to attempt a timid flutter; to "preserve the unities," it would be requisite so to attire him that he could emulate the eagle, or the sucking dove, or even the whangdoodle of Artemus Ward, soaring through space in matchless symmetry of gyration, while the gathering thunder-clouds would form a "cheap and effective" background to the resplendent brilliancy of this "interesting thing."

But why not go back to the year one, to the hour before Adam was ashamed, and why not photograph all the "good figures" in primitive costume of the period? Our friends would be more likely to recognise us in this garb than in that of the Crusadic epoch. They may have admired our natatorial grace at Ramsgate or Brighton, but they have never had the pleasure of a laugh at our expense when we were habited in all the glories of chain-armour and a sword so long that it tripped us if we attempted to walk.

"Novelty" in portraiture will be secured by, firstly, photographing the right side of the face—not necessarily the side on which the hair is parted, nor that on which ornament or flower is displayed. The higher eyebrow must be the nearer to the camera; this places the perspective of the eyes in correct drawing. One half the photographs taken err in this respect. With the majority of sitters, the left eyebrow is the higher one; the face must, therefore, turn to the right. Too many photographers, in Arcadian simplicity, photograph their clients according to the cut of the dress, to the display of the jewellery, or some other absurdity, or—a very fruitful source of error—if called on for a portrait to pair with one previously taken, they have an idea that the two photographs must be looking towards each other! And to attain this ambitious piece of excellence, regardless of the eyes being possibly thrown out of drawing, they will proclaim aloud their incapacity for their vocation, and,

instead of amending their deficiency of knowledge in the art of drawing, will employ their leisure in calculating the smallest number of grains of certain chemicals with which they can produce their daily portion of work. And still they languish for something "new" in portraiture!

The second novelty in portraiture consists of the proper balance of the head on the shoulders. There is a quantity of very fine manipulation in the shop windows, but marred by want of balance. Operators are too fond of a twist or a kink in the neck, and the result is a painful exhibition of lopsidedness. The chests of the sitters are not expanded, and the greater portion of them present a "weedy" appearance. These are best known as the "hang-dog" portraits, and the collections of them are very extensive throughout the country. It would be a welcome "novelty" in portraiture to know that the last of these abortions had been taken.

In the photograph of the bust, too much importance cannot be given to the chest, which is the base of the picture. If the base be shrunken, it is hopeless to expect dignity in the head. Now, at the bidding of his tailor, a man will expand his chest without a murmur; a like request from his photographer is met by the complaint that he "feels stiff and awkward." This is only an illustration of human nature. The man feels confidence in the ninth part of anatomy, and submits with good grace to a will which, in this particular, is stronger than his own. But what about the photographer? Has he shown his will, or has he not rather betrayed the want of it by twisting and twirling his sitter, now in this direction, now in that, and undecided in the end what to do with him, except to pose him the same as the last-comer, who turned out very well? But if this photographer were able to draw, he would know at a glance where to rely for his best points; the sitter would be in the chair, his chest expanded, head up, "with an eye like Mars, to threaten and command;" the picture would be taken without a word of complaint, and with an absolute relish for another.

In a succeeding paper the subject of composition will be dealt with.

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THE *Photographic News* lately described and illustrated an apparatus of foreign origin for numbering negatives. It consists of a lantern, having attached to it a series of stencilled figures, which can be used in rotation. The negative to be numbered is fitted, before development, into an angle-piece on the outside of the lantern, and by touching a knob an orifice is uncovered, showing the required number, and its image is impressed by light on the corner of the film. The same apparatus can, if more convenient, be fitted into a window-shutter, so as to utilise daylight.



## OUR FULL-PAGE ILLUSTRATION.



NEW photo-zinco block process, of which our full-page illustration is a specimen, has recently been introduced by the Meisenbach Company (Limited), 31, Farringdon-street.

The special advantage which this block has over others of similar nature is that it can be used for rapid printing in newspapers and magazines. After costly experiments, the Company have been enabled to engrave the block much deeper than has hitherto been done—hence its good printing qualities. Printers have complained that the more finely grained blocks usually clog up when common ink and paper are used; and the Company believe that this difficulty is now satisfactorily overcome by their new system. A fresh opportunity is thus opened for an economical and expeditious method of illustrating passing events and giving portraits of political and social celebrities, &c. The process, being of a photographic character, is naturally much more accurate than wood engraving.

## ON PAINTING STUDIO BACKGROUNDS.

BY A SCENE-PAINTER.



HERE are several methods by which a background for photographic purposes can be prepared. Sheets of brown paper stretched over a frame will satisfy the artistic instincts of some, whilst others will not be content until the said frame is covered with an æsthetic wall-paper, fringed with a dado. Such arrangements are seldom satisfactory, and most photographers will agree that there is nothing better than an unobtrusive *cloth*, painted with suitable colour, which can be set off by various *properties* placed in front of it. It is the purpose of the present article to point out how a background can be painted at very little cost, and which will fulfil all the requirements of the photographer.

A good sheeting—unbleached—is about the best material to work upon, for it can be bought two yards wide, and no joining will be necessary. Three yards of it will make a background 9 ft. by 6 ft., which is quite large enough for all practical purposes. A frame upon which to stretch and paint it is a *sine quâ non*, and this frame must, therefore, be the first thing to occupy the attention of the worker. The frame may even form the permanent support of the background; but this course is not recommended, for it is far more convenient to furnish the finished background with a roller—in the manner to be described hereafter—so that it can be hoisted up bodily to the ceiling, and out of the way when not in actual use.

The painting-frame should be of good substance, for it will have a heavy strain to contend against when the canvas is nailed upon it. Let it be made, therefore, of wood measuring  $2\frac{1}{2}$  in. by 1 in. *nominal*. (The word *nominal* is used because at saw-mills wood is seldom of the thickness it purports to be, owing to the custom of ignoring the stuff lost in sawdust.) Fig. 1 shows how the corners of the frame should be joined, and how each side should be strengthened by angle-pieces. If these pieces are omitted, the shrinking of the canvas when first wetted will tend to draw the sides out of the perpendicular.

When the painting-frame has been made as directed, the canvas must be stretched upon it. A little care is required here, so that the canvas when nailed in its place shall present a smooth unwrinkled surface. Let the canvas be cut a few

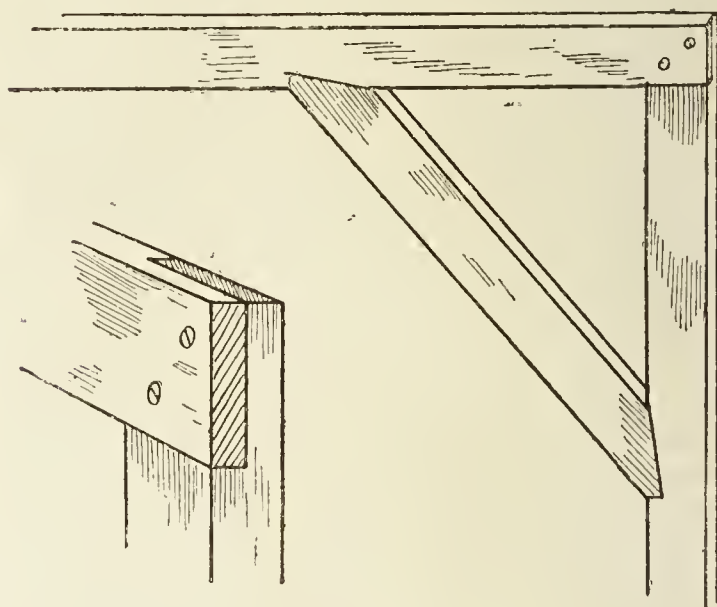


Fig. 1.

inches larger every way than the frame, so that the edges can be lapped over and tacked upon the edge of the wood. Fix each corner first with a single tack, stretching the canvas at the same time, so that there is no bulge or crease on any of the sides. Then proceed to tack the canvas down along one side first, placing the tacks at intervals of about three inches. Next tack down the opposite side in the same way, drawing the canvas tight from the side already nailed each time a tack is driven in. The two other sides, that is to say, the top and bottom of the frame, must be treated in the same way in succession, and if the work has been well done the sheet will exhibit one smooth surface.

The next operation is to prime the canvas, or fill up its pores ready for the reception of the paint. This consists in giving it a coat of thin, hot glue, or strong double size. The latter is, perhaps, the more convenient vehicle to use. Take two pounds of double patent size, pour upon it a



teacupful of water, and melt by heat. Skim the surface with a piece of card, and paint it into the canvas, so as to soak it well in every part. The moisture will cause the material to shrink to some extent, so that the canvas becomes as tight as a drum, and a good deal of this tightness remains when the sizing is dry. When dry, give it another coat; but if glue be used, this will not be necessary.

When the priming is quite dry it may have its coat of colour. If this colour is to be distemper, it must be mixed according to art—as the old books have it—and should be done overnight, for it must be used cold. Take two knobs of common whiting, such as is used for cleaning silver, and put them in a pail or other convenient vessel. Pour upon them sufficient warm water to cover them. The water will, in the course of five minutes, thoroughly penetrate the whiting, and will break it up. Stir the mass with a stick until it assumes the consistence of Devonshire cream. Drop-black ground in water (this can be obtained at any good artists' colourman) is now added, with constant stirring, until the white turns to grey. Here, let it be noted, that distemper colours when wet are most deceptive. They dry of a far lighter tint than they assume when wet. A spot of moisture on a whitewashed ceiling is painfully prominent because of its darkness. When it dries it leaves no trace of its presence. The same holds good in all distemper colours, and the unpractised hand is from this cause liable to mix his tints of a very much lighter hue than he intends them to be. However, the matter is set at rest by a simple test. Paint over a piece of board or cardboard with the colour, and dry it before a fire. The real depth of colour will then be readily seen, and if it is too light, more black can be added—if too dark, more whiting will set it right. By thus testing the tint once or twice during mixing, a satisfactory result can easily be arrived at.

The colour as thus mixed will, when dry, easily rub off with the slightest friction. It has nothing in its composition to bind its particles together. To remedy this, we must add size in the proportion of one pound to three pints of water. Hot water may be used, and the containing vessel should be placed on the hob until the size is thoroughly liquefied in it. This hot size is added gradually to the pasty mass with much stirring, and enough must be added to turn it into a liquid. It must be so thoroughly stirred that no sediment remains below unmixed. When cold, the mixture should set into a very thin jelly, which can be readily broken up with the brush.

A two-tie whitewash brush is the correct tool to use, and this can be either bought, or borrowed at smaller expense, at any oil-shop. Dip it in the colour, and apply it to the canvas in bold hori-

zontal strokes. Do not attempt to cover much surface at a time. Rub the colour well in, and almost exhaust the brush before taking a fresh supply. Cross the horizontal strokes with vertical ones, and in this way the brush will leave no ridges behind it. Begin, as in a drawing, at the top left-hand corner, and work gradually downwards, occasionally giving long horizontal sweeps with the brush from side to side. If the colour has been thoroughly well incorporated in the first instance, it will lie on the canvas as one flat tint; but if not, streaks and comets will appear, which will greatly disfigure the work, and render it necessary to apply a fresh coat above the first. On a favourable day, the background will be dry and ready for use in about three hours' time.

The method described is called distemper-painting, and is employed by scenic artists at theatres. There is an alternative process whereby a background may be produced—namely, in oil-colours. Distemper is, on the whole, better and cheaper for this class of work; but it is a medium to which few are accustomed. As some will prefer to paint in oils—if only because they have been used to painting small pictures with oil-colours—a few details concerning that method of painting a background will be helpful.

The frame must be made, and the canvas mounted and primed as already directed, for the oil-colour will take well on the sized surface. Oil-paint, as generally used, has, as we all know, a gloss or shine upon it. This would naturally militate against its employment for photographic purposes, where all sources of reflection are studiously avoided. The colour must therefore be mixed so as to dry with a dull, matt surface, like distemper takes to itself by nature. To secure this end, certain precautions must be taken in compounding it. White-lead, bought ready ground in oil—is the basis of nearly every colour used by the house-painter, who prepares it for use by thinning it with boiled oil and just a trace of turpentine. So mixed, it will dry with that gloss which we desire to avoid. But if we mix the paint as follows, we at once get over the difficulty:—Take 2 lb. of white lead, 2 oz. of driers, sufficient black, ground in oil, to give the tint required, and thin with turpentine alone, without any oil save that already in the white-lead and black, and which will be sufficient to bind the colour together. Paint this on to the primed canvas with a much smaller brush than that recommended for distemper, and when dry give it a fresh coat. In mixing the oil-colour, remember that it has, unlike distemper, a tendency to become darker in tone.

There is some little care necessary in taking a cloth off the frame. First of all cut the canvas



away at the top of the frame in a straight line, and nail and glue it on the batten which is to support it in the studio. This batten may be somewhat less in substance than that which was recommended for the painting-frame. Now cut round the sides and the bottom, and tack and glue the latter to a roller seven feet long. This roller should be about  $1\frac{1}{2}$  in. in diameter, and can be bought ready for use at any good sawing and moulding mills. Fig. 2 shows how the roller should hang at the bottom of the background, and how it is pulled up by a cord at either end. These cords should run through pulley-blocks fixed on the ceiling above. This plan is far better than that of hanging a background like a blind, with the roller at the top, for it ensures the canvas always having a weight on its lower edge, which makes it hang without wrinkle. Two or more backgrounds of different tints or designs can be hung close to one another, and can be let down for use at a minute's notice.

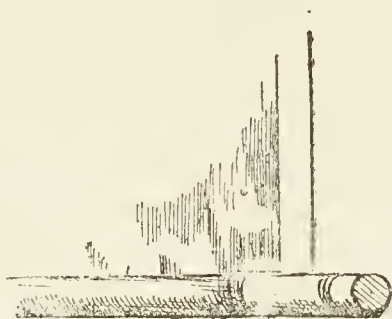


Fig. 2.

So far, I have considered plain backgrounds only, which can be made and coloured—if my directions are faithfully followed—by anyone who has the proper use of his hands. If the worker is gifted with any artistic sense, and is in the habit of sketching in oil or water-colour, he may attempt something a little more advanced. The great thing in designing a background for photographic purposes is to keep in view the fact that it must be subordinate to the figures which are to stand in the front of it. It must be of the most subdued character all through, and there must be a complete absence of those violent contrasts which occasionally give so much force and effect to ordinary pictures. Let it be remembered, too, that the background, measuring, say 9 ft. by 6 ft., is to be reduced to as many inches when it comes to be photographed. Any *fine* work, therefore, would be quite lost upon it. The strokes of the brush must be bold and firm, without any necessity for finishing off rough edges. The background must rather hint at what it is meant for, than loudly proclaim its identity. The true artist will, of course, readily see that this is the right spirit in

which to undertake the work, and he cannot do better than examine the productions of our best portrait-painters, with a view to study the way in which they fill in their canvasses round about their figures. I once heard, or read somewhere, an anecdote of one of our portrait-painters, to the following effect:—A lady of his acquaintance called upon him one morning, accompanied by her son, a boy of about fourteen years old. This son had shown evidence which proved conclusively—to his fond mother—that he was destined to be a great painter. She proposed that the portrait-painter should allow young hopeful to watch him at work, and to help him in his studio. “He might paint in your backgrounds,” she suggested. “That, madam, is the most difficult part of my pictures,” was the reply.

## ON THE EXERCISE OF TASTE IN PHOTOGRAPHIC PRINTING.

BY VALENTINE BLANCHARD.



It will, I think, be admitted as an incontrovertible statement that whilst all has been done to the very best of the amateur's ability to secure everything possible in the negative, both in the selection of the subject and in careful treatment of the negative during development, that when it comes to the printing therefrom, and he has seen the first rough proof, his interest rapidly diminishes and he is only too glad to transfer to some one else the task of producing a number of copies. This is scarcely as it should be, for the negative is, after all, only the means to the end, which ought to be the most perfect transcript of nature possible by a photographic monochrome. The more important is this, when it is remembered that the photographic production is heavily handicapped at the very start; for, whilst the painter can by the wealth of colour at his command give importance to those parts of the picture which most please his eye, and by the opposition of warm and cool tints accentuate or subordinate at will, the photographer is limited to a literal rendering of nature as far as possible in one photographic tint, and that only too frequently not the one most suited to the subject. Now, the object of this paper is to urge the amateur to not rest content with the production of the negative, but to spare no pains in getting from it the most artistically-finished picture it is capable of yielding.

The painter's judgment on a photograph is generally severe, but unfortunately in the majority of cases only too true. His opinion of a photograph is that it is *interesting*, and certainly



useful to him in many ways, but, taken as a pictorial rendering of nature, absolutely worthless. It can only be accepted as a compromise. The foreground is too dark, the foliage much too heavy, the sky a mere blank, and the aerial perspective almost obliterated. Undoubtedly too often this is true, and must be accepted as just criticism, though in his own province also the painter has not the power to tell all the truth, and he has to be content with a compromise, for, with all the power of colour at his command, he can only suggest the splendour of a summer's day, and his most successful results are secured when he attempts to render nature in her more sullen and fitful moods, and a lower key in consequence becomes necessary.

Now, the amateur, when he examines his most successful negative, and bearing in mind the usual criticism of the painter, is compelled to admit, if he have true artistic feeling, that the distance is exaggerated; and though there may be indications of clouds, yet, when the negative is printed, somehow they do not come out properly, except by making the foreground much too dark—in fact, there is great want of harmony, for the upper half of the landscape is too light and the lower half a great deal too dark. Now, there is no help for this, for the blue of the sky and the blue-grey of the distance will impress themselves on the sensitive plate long before the reds, browns, greens, and yellows of the immediate foreground have power to make their presence apparent. Various methods have been adopted from time to time to give more exposure to the foreground than to the sky, and perhaps the most practicable for ordinary landscape work is the hinged sky-shade, first suggested by Mr. W. England many years ago. A little modification would be needed to make it fit more closely down on to the front of the lens, in order to shut out more perfectly the light from the plate when closed; but this could easily be managed. If, for instance, the flap were covered with gutta-percha and warmed, it would, when put on the lens, easily take the impression of the hood of the lens. Perhaps it would be better to put black velvet over the gutta-percha, and, after well warming the whole, the rim of the lens would impress the velvet into the gutta-percha, and thus make a still more perfect protection against light. But this is quite a matter of detail, for a little ingenuity will get over any difficulty. Such a shutter as I have indicated can be opened and shut in half a second, which will be found quick enough for the generality of landscape subjects. Of course, with very rapid plates, a sufficiently small stop must be employed to make the exposure correct.

It will be seen that in opening and shutting such a shutter more exposure is given to the fore-

ground than to the sky, and, in consequence, some of the disproportion of light and shade between the distance and foreground will be cured; but we have to deal with the negative as it is, though any method for giving more exposure to the foreground than to the sky will help in giving harmony; yet something can be done in the printing to still further help to a more perfect result. Every amateur has to pass through the bitter disappointment of finding the lovely extensive views he admires so much, and that he desires so eagerly to perpetuate in photography, are nearly always failures, and that he has to content himself with more homely material much nearer to hand.

Take, for example, that most sunny landscape by Turner in the National Gallery—the “Childe Harold’s Pilgrimage”—as the kind of extensive subject the amateur would like to secure, and well examine the very good engraving of it published by the Art Union. We find the intense blue of the sky and the soft blue-grey of the distance rendered by strong monochrome tint softened down from the zenith to the horizon. Let the amateur now examine a similar subject produced by photography, and he will find that his sky will be represented by white paper, and his distance will only be faintly impressed on the paper, whilst his foreground will be unnaturally sombre and heavy. The engraving is harmonious because the deep blue sky is represented by a well-proportioned tint. The photograph is wanting in harmony because the sky is represented by white paper.

Now any method of printing which will get over this lack of harmony is undoubtedly to be desired, and is quite justifiable. Hence the importance for the amateur of printing from his own negatives, and not resting content until, by some means or other, he has produced more harmony in his finished pictures.

Now, a short time ago I dwelt on the importance of giving more exposure to the foreground as a means for securing harmony in the negative. If in printing, therefore, we can still further work in this direction, it will all be to the artistic gain of the picture. Let us, therefore, still further carry out this idea of the shade to protect the print from over energy. Bearing in mind, therefore, that frequently the clouds are visible in the negative, but that in order to make them appear we have to over-print all the rest, let us think how best we can get over the difficulty. If a piece of board be taken sufficiently large to completely cover the printing-frame, we have merely to raise it to any angle we may desire in order to admit on the negative a graduated scale of light. Now, I have already stated that the want of harmony is due to the actinic power of blue, and that in consequence, in order to give sufficient exposure to



the foreground, the sky and extreme distance have to suffer. Unfortunately, in the over-exposure of the sky, a great deal of the detail of clouds and distant objects is lost; but still, by the proper use of the board above spoken of, a sufficient exposure can be given to the sky to bring out all visible detail in it as well as in all the fainter parts of the picture, and still, in consequence of the gradually lessening power of the light, the foreground will not have become a hopeless mass of smudge. Still more can be said on this subject; but further remarks must be reserved for another article.

### NEW DARK ROOMS.



As we briefly indicated in a short paragraph in our last issue, the London Stereoscopic and Photographic Company have recently erected at Regent-street a series of dark rooms for the free use of any amateurs who may feel inclined to make use of them, whether they be customers or not of the Company which offers them such generous hospitality. As these rooms exhibit in their construction and arrangement much ingenuity, we have thought it well to publish some further account of them, illustrating our remarks with cuts, which we hope will be of help to the reader.

Space in London is a very different thing to space as applied to the universe generally. The word, when used in reference to the latter, signifies vacancy, but, in connection with London, it means the reverse, for there is no vacancy to speak of, every inch representing a money value. In no neighbourhood is this more apparent than in fashionable Regent-street, the very heart of the western Metropolis, where these new dark rooms are situated. It has therefore taxed the architect greatly to cram into the limited area available all the necessary fixtures which must be found in a well-appointed photographic dark room, and his endeavours have been signally successful. In a space measuring about sixteen feet long by five feet deep, he has contrived to erect four distinct rooms, replete with every convenience which the most exacting worker can require. These rooms are all very much alike, and therefore the description which we will now give of one of them will serve for all.

At the outside the room has the appearance of a very large cupboard with folding-doors; but within it presents the view shown in Fig. 1. S is the sink, in which lies a wooden grid (not shown in the cut), upon which a plate may be laid after development, while the rose-tap above (L) treats it to a plenteous shower-bath. We may notice that this tap is on the plan of those in use at the

Camera Club and other places. It is on a movable arm, and the mere act of bringing this arm over the sink turns on the water, which ceases to flow directly the arm is returned to its former position. T is a small ledge or table for the use of the operator. J is a light-tight case, containing divisions for the storage of sensitive plates of

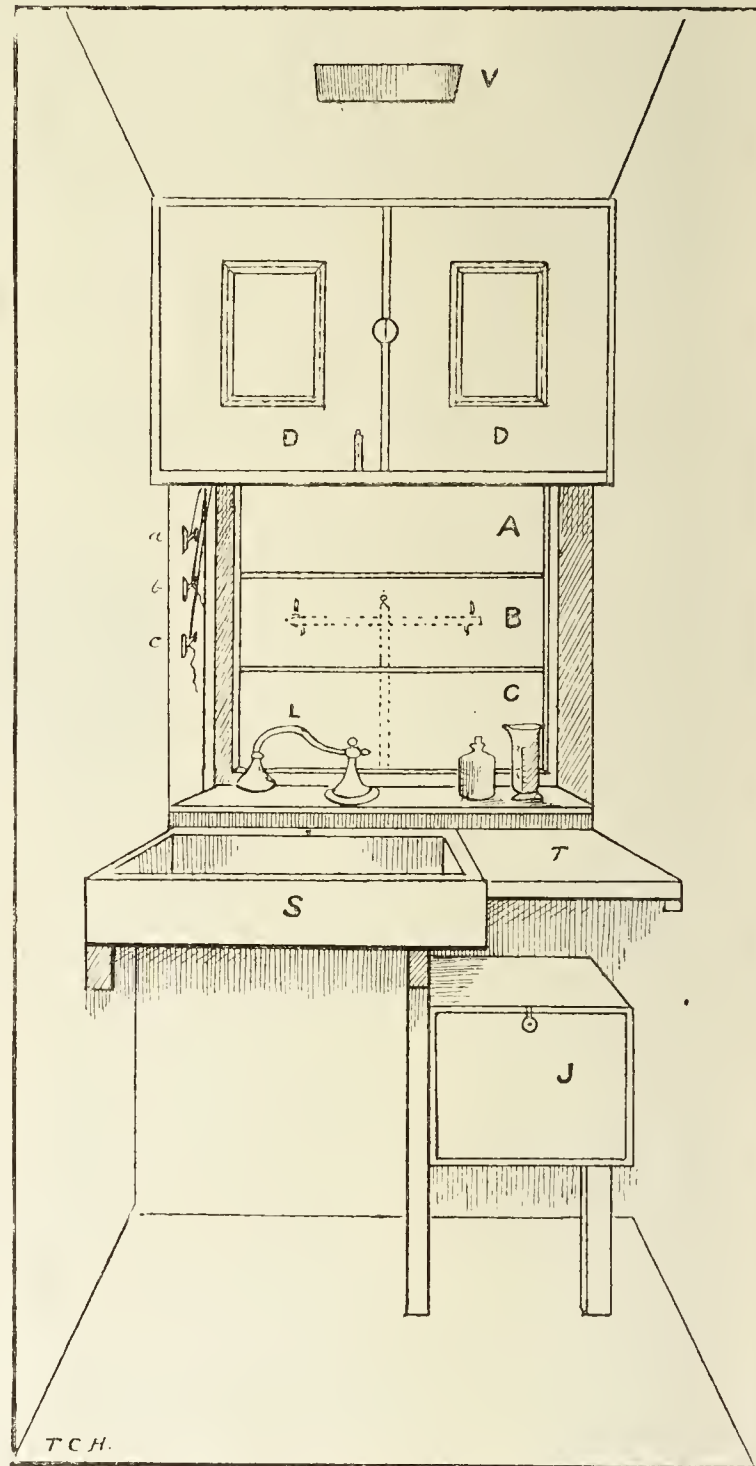


Fig. 1.—The Dark Room.

different sizes. D D are doors which, when open, will let in a flood of daylight, should white light be wanted. The ordinary illumination of the room is provided for by the window below these doors. This consists, first, of a window of the usual household type. There is



then a space of some inches between that and the non-actinic window to be presently described. In this space there is a double gas-jet, for daylight in London is sometimes remarkable for its close resemblance to night. The gas-jets obviate this, and are shown in the cut by dotted lines. The window-frame has three grooves for the reception of three panes of differently-coloured glass, which can, according to requirement, be used either separately or collectively. They are lettered A, B, and C, and consist of yellow, orange, and red glass respectively. In the illustration they are shown raised to different levels for the sake of clearness only; in practice they are either down for

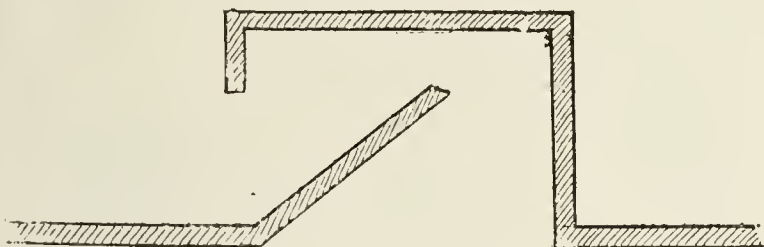


Fig. 2.—Section of Ventilator.

use or pulled up quite out of the way behind the doors D D, in a space provided for them. The cords which move them are fastened to the pegs at the left-hand side, marked *a*, *b*, and *c*.

It will thus be seen that these dark rooms are most admirably adapted to the purpose for which they are built, and many an amateur who may not have the opportunity of visiting them will be

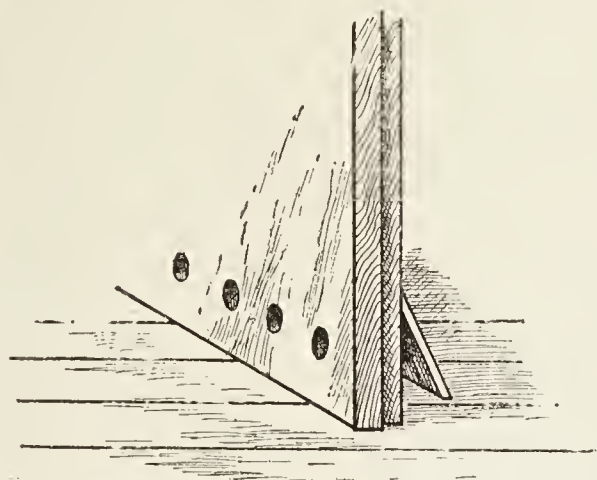


Fig. 3.—Ventilation Holes at Bottom of Door.

glad to take a hint from this description, which will enable him to provide some of the same conveniences for his own home use. Let him note in particular the admirable manner in which the apartments are ventilated. The square opening in the ceiling, marked V, is the main ventilator, whose duty it is to let out the vitiated air—and air must soon become vitiated in such narrow quarters. Of course, precautions must be taken that while the enemy bad air is let out, the other enemy, white light, must not find an entrance. Fig. 2,

illustrating the ventilator in section, will readily show how this happy conjunction is brought about.

But it is little use to provide an exit for bad air unless we also provide an entrance for pure air to take its place. In these dark rooms this necessary provision is not lost sight of. The fresh air finds an entrance through holes, guarded against the admission of light, which are pierced at the bottom of the doors, close to the floor. This arrangement is illustrated in Fig. 3.

Everybody who has made any progress in the art of photography must have experienced the difficulty, when a batch of plates is in process of development, of those plates quickly accumulating in the vessels used for final washing, until it becomes a problem to know how to dispose of them. When space is unlimited, they can be racked and put

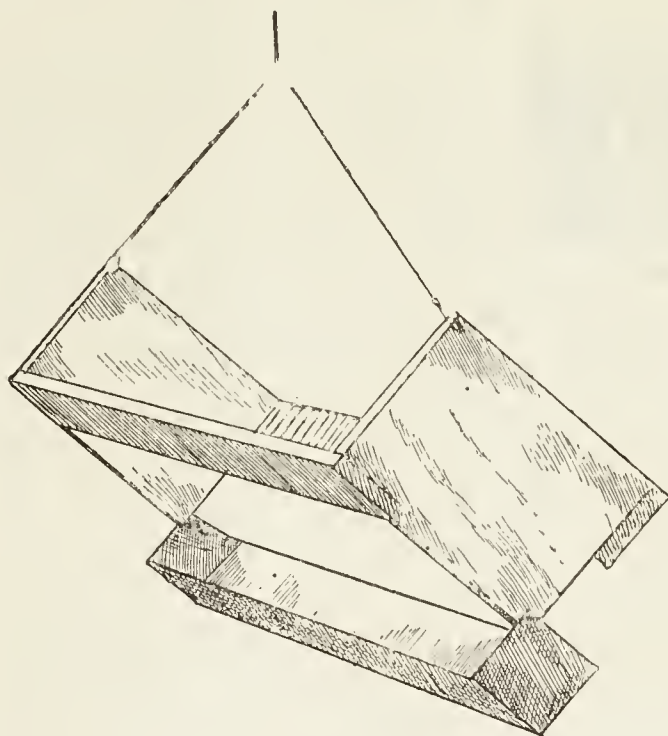


Fig. 4.—Hanging Plate-rack.

away in any safe place until they are dry; but it is an impossible matter to do so in the limited area of an ordinary dark room. Let us see how this little difficulty is banished in the case before our notice. The glass pictures, as they are finished and receive their final rinse, are hauled up to the ceiling of the dark room by means of the apparatus shown in Fig. 4, for which the London Stereoscopic Company would be fully justified in taking out a patent. Indeed, letters patent have been granted many a time and oft for contrivances of far greater pretension and much less originality. The cut almost explains itself; but we will venture to supply a few details. Two pieces of grooving are fixed by means of rectangular ends, so that they lie at right angles to one another, as in an ordinary



plate-rack. Below them hangs a zinc V-shaped trough to catch the water dripping from the freshly-rinsed plates. This contrivance is slung up to the ceiling by a cord, and its movement is rendered easy by means of a hidden counterweight. The idea is perhaps borrowed from the grocer, who weighs his tea and sends his scales aloft in much the same fashion when he has done with them. Amateurs and others will thank the company for putting them up to this little dodge, as well as for pointing out how a serviceable dark room can be erected in the most limited space. We trust that many of our readers will avail themselves of the undoubted advantages which these well-contrived rooms offer to them "free, gratis, and for nothing."

## A USEFUL TOOL.

BY "DEXTER."



It is very curious to think how a man becomes attached to any particular little appliance, or tool, that he is in the habit of working with. A carpenter is sure to have some favourite, well-worn chisel, that he values far more than any two others. He can depend upon its performance, he will tell you, and, whether from mere fancy or not, he firmly believes that no other chisel in the world will do its work half so well. In like manner the fisherman will have his favourite rod, the billiard-player his own particular cue, the cricketer his bat, the violinist his fiddle, the photographer his lens, and so on *ad infinitum*.

These thoughts were suggested to me the other day as I was handling a favourite knife of mine. It only cost sixpence, but it is worth much more. It is made of the finest steel, will take an edge like the keenest razor, and, best of all, if it is mislaid or lost I can get another just like it for the same money. As many readers of the CAMERA may be anxious to know what kind of knife this is, and where it can be bought, I will let them into the secret without more ado.

In the byeways of any city or town, the followers of St. Crispin are to be found in plenty, and in the places where they most do congregate are found certain shops which supply them with the materials of their trade. I don't know how the owners of these shops designate themselves, although I have a suspicion that in their higher grades they are leather dealers. However, the humble shops to which I am calling attention sell uppers, leather soles, nails for the same, cobblers' wax, heel-ball, shoe laces, and, besides a numerous etcetera, the particular form of knife which I was just now lauding, and which is called a shoemaker's knife.

There seem to be two varieties of this most

useful article—one, which costs fourpence, has its blade simply stuck into a round, wooden handle, out of which it falls on the first opportunity; and the other, costing sixpence, with a blade rivetted on to its handle. The latter is the article to buy, and when buying it, buy another one as well, for both will be useful.

To the photographer such a knife is particularly valuable. Its blade is so good and so thin that it will cut through a thickness of wood or cardboard which would be quite beyond the powers of an ordinary pocket-knife. How often does not a photographer require a little, hastily-made frame or other contrivance to hold a negative? Or perhaps he may want to reduce an already-existing aperture to a smaller size. Out of some thin pine boarding, and by the help of the knife, the pieces are readily cut, tacked together with some fine French nails, and the thing is done. The knife may, perhaps, be blunted a little with such rough work; but a few strokes on a good oil-stone, and lo! Richard is himself again. In like manner, wooden boxes for the transmission of negatives—and negatives should always be packed for travelling in such boxes—can be readily knocked together.

Another use for the trusty knife is for cutting through thick cardboard. With a little practice a good *passee partout* mount can be easily cut with it. Mark out on the cardboard faintly with a pencil the exact size and shape of the opening which it is intended to cut, and procure a flat-ruler with a bevelled edge as a guide for your knife in cutting it out. A few firm strokes—one on the top of the other, so to speak—will cut the card completely through. If the card be unusually thick, it is advisable to furnish the knife with a kind of extra handle, so that more pressure can be put upon the blade without any danger of breaking it. This extra handle will take the form of two half-rounded pieces of wood placed at either side of the blade, and bound to it tightly with string, so that only about an inch of the point of the knife is visible. It will be found that by grasping this additional handle much more cutting power is gained.

In cutting up a sheet of sensitive-paper the knife again is to the fore. The best plan is to fold the paper into a kind of pad, as nearly the size of the negatives to be printed as possible. Put this pad on a sheet of plate-glass, and above it place a negative. Now run your knife round the negative as a guide, and the paper is cut through to the sizes required correctly and cleanly. It need hardly be said that prints can be well trimmed in the same way—indeed, there is no better knife for the purpose. Let me remind beginners that they will save much time and trouble by trimming their prints shortly after they leave the



printing-frame, and before they are wetted with any solution.

The possessor of one of these cobblers' knives will become so attached to it, and find so many more uses for it than those detailed, that he will value it at far more than the insignificant sum which it originally cost. It will take a great deal of wearing out, and even when it becomes desirable to replace it by a new one, the trusty old servant can commence a fresh career in the kitchen. "To what base uses may we not come?" the poor knife might exclaim; for to begin life as a photographic assistant and to end it as a potato-peeler is indeed a mighty fall!

## Apparatus.



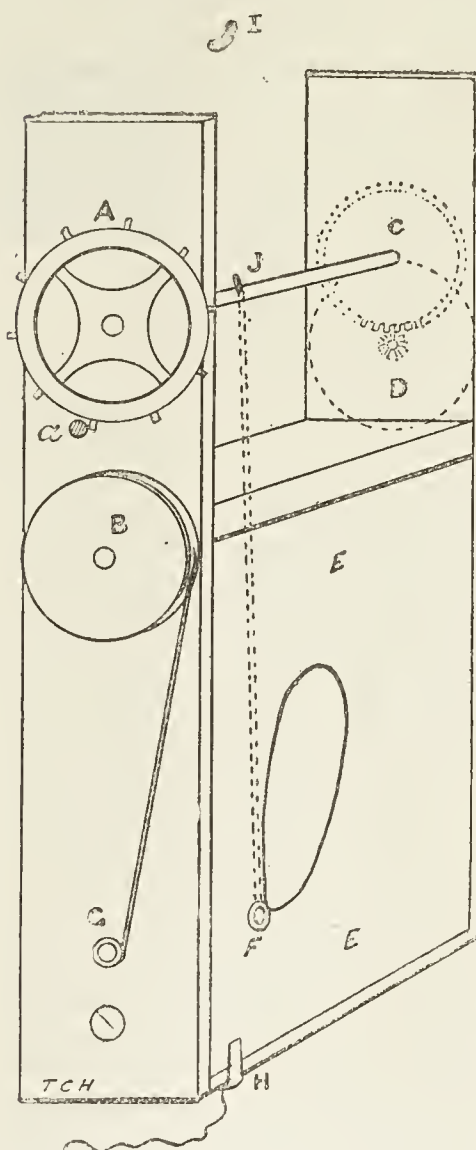
WE have the pleasure to call attention this month to two contrivances, which are both the invention of an amateur photographer—namely F. Dresser, Esq., the brother of the energetic hon. secretary of the Camera Club. The first which we notice adds one more unit to the long catalogue of instantaneous shutters which have been already brought forward, and perhaps its most distinguishing feature is that it is novel in its form where novelty would almost seem to be an impossibility. Of course, it must necessarily bear some sort of resemblance to those already in the market, else it would not be a shutter. For example, it has a flap which opens and shuts, and it has a flange to attach it to the camera lens. But in these two points alone it resembles other shutters. Its movements are new, and, so far as we can see, exhibit an altogether novel principle. However, our readers will be able, with the help of the sketch, to judge of this for themselves.

It is only fair to say at the outset that the shutter which we illustrate is likely to bear but faint resemblance to the shutter when completed and ready for the shops: for it is roughly made by an amateur workman, and has been built up of such materials as were ready to his hand. The wheel-work has, for instance, evidently done former service in an American clock. But, at any rate, the sketch of this experimental skeleton of what the shutter will ultimately be, enables us to explain its principles better, perhaps, than an elaborate and highly-finished article would do.

The shutter consists of a frame of the size shown in the sketch. The two sides are made of thin ebonite, and the shutter proper, E, which is of the flap type, is of the same material. B is a grooved wheel, upon the axis of which is the hinge upon which the shutter works. It is evident, therefore, that when the shutter is opened, the

wheel B turns to the left, and when it shuts into its former position (drawn down by the elastic band fastened to the peg G) it turns once more to the right. To overcome the action of the india-rubber band already mentioned, and which keeps the flap shut down, there is another band, which is attached to the flap at F, but which is only put into action just before the instrument is wanted to work. When this is the case, it is stretched as shown by the dotted lines—over the peg J—which projects from the axle of the wheels A and

C. Let us now turn our attention to the upper part of the apparatus. It will be seen that the wheels A and C work on the same axle, A having pegs or stops set in its outer edge, and C being an ordinary cogwheel. The cogs in this latter work in corresponding cogs in the plain wheel D, which acts as a flywheel, and which, keeping the system in motion, graduates that motion to a certain rate. The opening in the frame in which the axle of the wheel A turns is not circular, but is of the shape shown at I.



Mr. Dresser's Instantaneous Shutter.

And here we have one of the most original points in the contrivance. So long as the pressure upon the wheel is downwards, as it must be when the rubber-band between F and J is on the stretch, one of the knobs on the outer rim of A must catch against the peg *a*; but when the shutter is released by turning the catch H—which can be actuated by a pneumatic ball if preferred—the shutter opens and assumes the horizontal position. The wheel A is now pulled away from the peg *a* towards the right, turns on its axis, so that the rubber-band is thrown off the projection J, and



the shutter once more closes by virtue of the permanent band attached to G.

A little consideration will show that this apparatus can be made to act as a time shutter in the following way:—Let us suppose that the strength of the band hooked on to J and F and the wheelwork is so adjusted that A takes just two seconds to make a complete revolution. It follows that, by turning it so as to make the band wind itself more than once round the rod upon which the projection J is placed, or less than once in varying proportions, we can control the time during which the flap remains open within very exact limits. In the rough experimental shutter from which our drawing was made, the wheels C and D (expressed by dotted lines), are outside the frame; A and B are also similarly situated. In making the finished article it would be as well if these wheels were protected by being hidden within a hollow box-like frame. The elastic bands could, with advantage, be replaced by metal springs. Indiarubber is rather too uncertain a material to give certain results.

The other piece of apparatus to which we have to call attention is the product of the same brain. But, in this latter case, Mr. Dresser appears in the light of a public benefactor—if not a national one—for he has discovered a use for the chimney-pot hat. At the moment when men were seriously thinking of trying to discard this symbol and sign of the true gentleman, and when it was told them that so long as they retained it they had no right to complain to lovely woman of the monstrosities which she clapped on to various parts of her anatomy, Mr. Dresser steps into the gap and exclaims, like the old Greek philosopher, “Eureka! I have found it!” In a word, Mr. Dresser turns the chimney-pot hat into a camera; and well, too, it fulfils its new purpose. A little lid at the top of the crown, when uncovered, discloses the lens; at the back of this there is the camera proper, with a modified Eastman roll-holder, containing a slip of bromide paper. The two rollers are prolonged outside the holder, and upon them is wound a piece of tape with measured divisions. This outside tape gives notice as to the quantity of paper unwound inside the holder, and constitutes a very good way of solving a difficulty which must be met in all roller-slides. The dark slides and other belongings of the hat-camera exhibit nothing new. We may feel sure that this instrument will meet with much favour. A man cannot well forget his hat, and so long as he does not forget it, he always has a camera at hand. He can remove it from his head as he bows to a lady, and possess himself of her *carte de visite* at the same instant. He can hide his face within it at church, as is the habit of some people directly they enter a sacred building, and as he turns it towards the officiating clergyman,

he can—but we need say no more to demonstrate the possibilities of Mr. Dresser’s hat-camera. We all owe him a debt of gratitude for contriving a new piece of apparatus, and for finding a use for the ugliest headgear the mind of man ever conceived.

## ARCHITECTURAL BACKGROUNDS.



HIDEOUS practice has grown up in the last century in the Lake district, and was continued in the early part of the present one, of coating all new buildings with a surface of roughcast, highly coloured in most cases with what, in the broad dialect of the country, was known as “boornt oombre,” a copious infusion of which was held essential to afford the hot, foxy, yellow-fawn colour which had become dear to the tutored (?) native mind. The picturesque old farm-buildings of an earlier date, among which may be found many to arrest and charm the eye of an artist, showed no such vicious treatment, but grew, as it were, from the soil, in the strong, broad, rugged, random walling of native ragstone. Settling at Rydal in the second decade of the century, Wordsworth found the natural beauty of the country deformed and blotted over by these great yellow blotches of building, and, by precept and example, set himself to work a reformation, in the course of years bringing about so complete a change that, except in cases where additions had to be made to buildings already so coated, the face of yellow roughcast became the rare exception, and the bold, wholesome rubble work in dark grey stone the almost universal rule. The gain to both buildings and landscape is immense, and, with the rich body of foliage so common in that country, it has become quite possible for a new building to be felt as an addition to the beauty of the scene, instead of, as at one time, a sure blot to it. To take another example. There were, in this country, until the last half-score of years or so, few combinations of landscape and buildings so interesting and picturesque as that presented by Arundel, its castle, church, and accessory buildings, in form varied, but not too broken, the square masses of building alternating with the rounded and undulating shapes of the foliage, and the whole resolving into a graduated decline from the higher level towards that of the sea. In colour, the combination was no less happy; the grey of the masonry, the green of the trees, and the quiet mild red of the tiles met in harmonious contrast (there are accordant and discordant contrasts), and made a picture which artists delighted to dwell on. In an evil day (architecturally speaking) the Duke of Norfolk resolved to build a great church close to his castle, and, under a no less evil star, his architects decided to build it of yellow oolitic stone. Farewell, henceforth, to the landscape charm of Arundel! A large raw mass of Bath-brick-coloured masonry took precedence of all else in the view, drowned all the delicate contrasts of tint erewhile so interesting and attractive, and caused the artist who had once delighted to get a note of Arundel under one or another of its many phases of effect to close his sketch-book and turn away with a sigh—haply with a groan.—*Builder*.



## ANCIENT MONUMENTS.



THE Act of Parliament promoted by Sir John Lubbock, and known as the Bill for the Preservation of Ancient Monuments, should have warm supporters among all photographers, whether amateurs or professionals. The latter have a financial interest in the preservation of those objects which are the lions of the neighbourhood in which they live, for there is always a steady demand for photographic representations of them, and the amateur's interest in such things is best proved by the fatigue and expense that he will willingly incur if he can only secure an image of them in his camera. It behoves us all, therefore, to see that our old monuments are treated with respect, if not veneration; and we can all do good service by stopping wanton disfigurement or injury when we have the opportunity. Even Stonehenge has not escaped the ravages of holiday-makers, as the following extract from the *Times* will show:—

For many years past the preservation of Stonehenge has been fitfully discussed by antiquarian societies. It is now high time that general public interest should be awakened to a sense of the condition of this venerable ruin. Three years ago a railway company had the effrontery to propose to run their railway through the outskirts of the site. Stonehenge is now threatened, not so much by the natural process of decay as by the destructive agency of human wantonness and vulgarity. Several surveys and reports of the condition of the ruin have been made by learned societies. But the Wilts Archæological Society, the natural guardians of Stonehenge, deserve the credit of having instituted a more exhaustive examination and followed it up by more practical and comprehensive suggestions than any which are on record. The report of the deputation appointed by them to inspect Stonehenge we published yesterday. The deputation carefully examined every stone in order, and noted down on the spot its exact condition, with especial reference to injuries of recent date. They simplify their remarks upon each stone by referring to its number on a plan lately prepared by Mr. Gunnington, one of the deputation, and a well-known authority on Stonehenge. The general conclusion to be gathered from the report is that Stonehenge is in danger of being vulgarised out of all knowledge, and certainly out of all its venerable charms. The dissection of the huge trilithons by tempest and other natural casualties, although regrettable, can be regarded with equanimity. Such casualties are incidental to age, and in time become part and parcel of the antiquity itself, stimulating the imagination by their desolate aspect. Less tolerable are the ravages of those small animals which the report dignifies by the name of "mischievous rodents." The rabbit population is incessantly undermining the stones, and promising them a premature downfall. But rabbits can be shot, trapped, or ferreted. It is the human creature which is so hard to deal with. In the last fifty years, it is not too much to say, Stonehenge has undergone a greater transformation than in the whole thousand or two thousand years during which it has stood on Salisbury Plain. Not that it has been altered in substantial respects. But the surface of the stones, where accessible, has not escaped the tender mercies of this age of excursionists and bean-feasters.

Out of the eighty or ninety stones not a dozen were pronounced in fair order. The classes of injury are various. Visitors seem to have possessed and gratified a morbid craving to walk the length of all the stones which have fallen. The surface of all these stones, with the exception of one which has escaped the excursionists' vigilance by burying itself in the earth, has been worn away like the

surface of all pavement. Then, extensive chipping operations have been carried on by amateurs who found it impossible to leave the place without a memento of their visit. In some cases the fragments missing are so large that the worker must have come armed with formidable appliances.

## Reviews.

—o—

*Beginner's Guide to Photography, showing how to buy a Camera, and how to use it.* By A FELLOW OF THE CHEMICAL SOCIETY. (Lejeune & Perken, 101, Hatton Garden.)



THE scope of this little unpretending manual is fully indicated in its title. It has the merit of being so clearly written that a very young beginner will have no difficulty in mastering its details. All the necessary operations in producing negatives and in printing from them are carefully explained. Besides which there are chapters on making lantern-slides, on enlarging, and on photomicrography. A useful article on Exposure, by Mr. A. S. Platts, forms an appendix to this well-written book. The manual is fully illustrated with woodcuts of modern apparatus.

*Burton's Modern Photography.* Sixth and enlarged Edition. (Piper & Carter, Fumival-street, E.C.)

THIS volume forms number VII. of the series of useful photographic handy-books which are published by the same firm. Mr. W. K. Burton's name is so well known in the front rank of experimental photographers that it is quite unnecessary to say that his book is thorough and reliable. It is a more advanced work in every way than the one which we have just reviewed, and is particularly valuable to those who have the courage to make their own gelatine plates. It contains valuable hints on portraiture, detailed lessons on exposure, and much information concerning the quick-printing papers recently introduced. Both professionals and amateurs will find in Mr. Burton's book many original hints which will help them materially in their work.

*How to be a Successful Amateur Photographer.* By W. J. LANCASTER, F.C.S. (J. Lancaster & Son, Birmingham.)

MESSRS. LANCASTER & SON can boast with truth that they have done a great deal to foster the rage for amateur photography which possesses mankind at the present moment. By the introduction of cheap apparatus—so cheap that one wonders how the articles can be produced for the money—they have helped many a photographic aspirant, giving him his first initiation into the mysteries of the black art, and perchance inducing him later on to take an earnest interest in photography. The book before us is intended to show the amateur what to do with the apparatus which he has purchased. It is clearly written, fully illustrated, and well printed. The fact that it is now in its twentieth thousand speaks well for the manner in which it has been received by the amateur world. It fully merits the success which has attended its publication.



## Correspondence.

To the Editor of THE CAMERA.



IR,—We note in your last issue a formula given for rendering paper negatives transparent by means of immersion in a solution composed of benzole, gum dammar, and gum elemi.

It may be advisable to point out that the immersion of paper in the foregoing compound, or in variations of that compound, for the purpose of rendering that paper transparent, forms the subject of a patent which was purchased from the late Mr. Woodbury by our Company. All rights so conferred upon us we shall most stringently maintain.—Yours respectfully,

THE WOODBURY TISSUE AND FILM  
COMPANY.

Java House, South Norwood, London, S.E.

August 16, 1886.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

G. M. G. asks "what is the matter with the enclosed negative, and what remedy for the fault can you suggest?" We answer that the matter is that it is broken into exactly thirty-nine pieces, and that the best method of correcting that fault in the future is to use a little more common sense in the art of packing.

T. MEAKIN.—We are sorry that your question was crowded out last month. It is quite impossible to give a general price for the value of negatives, as that price must be governed by so many different circumstances. Ask for yourself at one or two shops, or have your own portrait taken, stipulating beforehand that you are to have the negative.

A. R. F. EVERSTED.—Your negatives are under-exposed, and in the effort to bring them up to printing density in the developer, they have suffered, as such negatives commonly will. We fancy that the mottled appearance is due to insufficient fixing. That the films are insufficiently washed is quite evident from the strong metallic taste experienced when the tongue is placed against them. We cannot understand the cause of the green spots in the paper prints. Use a smaller stop as a remedy for the fuzzy foliage. We are glad that you have succeeded with the soda developer.

X. T. L.—The work is tedious, but not difficult; and you must be prepared to waste a lot of gelatine plates before you secure a single good picture. One of the best lightning pictures which we have seen is published in the German periodical, *Photographisches Archiv* of August 16 last.

BEGINNER.—You are suffering from the infantile malady called over-exposure. The remedy is obvious. Reduce the amount of ammonia in your developer by one-half; you can add the other half in case the image does not appear within a reasonable time. Increase of pyro will give you density.

T. C.—We must refer you to our advertising columns.

SIGMA.—The value of such work if properly carried out—and this would occupy a lifetime—would be priceless theoretically, but practically it would never pay. A handful of scientific men would appreciate your work, and your name would appear in the "proceedings" of a few societies. The game is not worth the candle, unless you are a wealthy man, with time on your hands that you would like to occupy in the way you suggest.

THOMAS L.—We do not think that there is any copyright in the matter you refer to. Still, it would be as well to make some inquiry before you commence the work. We need hardly point out that simple courtesy should prompt you to write to the publishers as a preliminary step.

A NEW SUBSCRIBER.—You will find what you require in any old Encyclopædia, and also, we think, in Hardwick's "Photographic Chemistry."

THE *British Journal of Photography* gives the following recipe for a cement which will be found useful in the laboratory, for it joins glass, wood, or leather equally well:—Dissolve gelatine by the aid of heat (hard gelatine is the best for the purpose) in its own weight of acetic acid, and then add an equal measure of alcohol and keep in a well-corked, wide-mouthed bottle. When cold this mixture will be gelatinous, and when required for use should be heated by placing the bottle containing it in a vessel of hot water. When the jelly is liquefied, the object to be joined should be smeared with as small a quantity as possible of the cement, quickly pressed together, and allowed to remain undisturbed for twenty-four hours. After this time the junction, if carefully made, will be remarkably strong.

IN our review last month of the *Figaro Salon*, with its beautiful reproductions of the French pictures by the Goupil process, we expressed regret that no similar record was obtainable of the pictures annually exhibited in this country. We were somewhat premature in our remarks, for—although we knew it not—an illustrated Academy catalogue was actually at press at the time we published our regrets. We are sorry to say that the English work is far behind the French one so far as regards the execution of the reproduced pictures. This is evidently not the fault of Messrs. Boussod, Valadon, et Cie., who supplied the blocks, but rather of those who printed them. They are certainly not up to the right standard. The fact is that these process-blocks are so delicate in texture, and so far less bold than ordinary woodcuts, that they tax the skill of the printer to the utmost. Beyond extraordinary care, he must have at his command the best of ink and the best of paper. We all know what a poor silver print can be produced from the finest negative if the printer is new to the work. The illustrated Academy catalogue has suffered apparently from the same cause.

All communications should be addressed to the EDITOR OF THE CAMERA, 15, Bedford-street, Covent Garden, London, W.C.

All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.



# ❖ THE CAMERA ❖

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

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## Sayings and Doings.



DURING the late meeting of the British Association at Birmingham there were read several papers which should be interesting to photographers. Astronomical Photography—to which so much attention has been directed of late years—came in for the lion's share of consideration. Mr. Grubb showed and explained his model for controlling the movements of a large telescope by means of hydraulic power, set in motion by electrical attachments worked by buttons. He also explained a new method of controlling the clockwork by which a telescope is made to follow the apparent motions of the heavenly bodies. The President of the Liverpool Astronomical Society enlarged upon stellar photography, and Professor Pickering told of what had been done at the Harvard College Observatory towards obtaining photographs of the spectra of various stars.

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IN the first number of the CAMERA, published on June 1, allusion was made to certain photographs of the Pink and White Terraces of New Zealand, which are exhibited at the Indian and Colonial Exhibition at Kensington. We little thought, at the time those words were written, that in little more than a week those wonderful terraces would cease to exist. On June 10 came that awful volcanic outburst which has not only laid waste many miles of the fairest portion of the northern island of New Zealand, but has obliterated the unique siliceous Terraces—perhaps for

ever. The site of these Terraces is now occupied, we are told, by "scores of mud-cones, which are vomiting forth stones and mud, and hurling clouds of steam into the air. A scene of fairy-like beauty has been transformed into one of loathsome desolation."

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THE outburst may be likened to that at Krakatoa, in the Straits of Sunda, which occurred about two years previously, when a cubic mile of solid matter is said to have been hurled into the air in the shape of pulverised rock. But at Krakatoa there was no photographer at hand to record pictorially the desolation that was brought about. In New Zealand, on the other hand, many cameras have been busily at work since the eruption, and some of the pictures obtained have just been submitted to us.

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THESE excellent photographs are by Messrs. Burton Brothers, of Dunedin, who had previously published a large series of photographs of New Zealand. But what an awful contrast these later pictures are to those which came before. The smiling landscape is now an arid waste, covered with a snowlike mantle of volcanic ash, which in some places covers the ground to a depth of twenty feet. In the photographs the likeness to snow is remarkable; but in nature the ash appears as a dull grey coating over the once fertile and lovely country.

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GUSTAVE DORÉ should have seen some of these wonderful photographs as a prelude to illustrating



Dante's "Inferno." Even his giant imagination would have paled before these terrible scenes. Huge rocks encrusted with sulphur, and mineral matter condensed from the steaming vapours issuing copiously from the ground, are varied by torrents of hot mud and belching geysers. In other pictures we see the ruins of McRae's hotel at Wairoa, which looks as if it had been bombarded—as, indeed, it has been by the stones which fell so thickly through the poisoned air on that memorable night in June. Then, again, in another picture we see the thickly-coated roofs of the native huts, whose occupants have mostly perished. The whole series of pictures is of the most intense and melancholy interest. They may be seen at Messrs. Spooners' shop in the Strand, and at Mrs. Evans's, in Duncannon-street, Strand. We learn that Mr. A. H. Burton, who photographed these scenes, is about to arrive in this country, and will lecture on the subject of New Zealand in our principal cities. The lecture will be illustrated by photographs and the oxyhydrogen lantern.

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THE long-promised "Woodbury Tissue" is at last in the hands of photographers and awaiting their verdict. Everything that the late Mr. Woodbury produced, he did in a most thorough manner, and from the specimen pictures which we have seen taken on this new material, we are inclined to think that the tissue, to which he devoted the last years of his life, is a success. It has the appearance and flexibility of thick gold-beater's skin, but is clear as glass. There is one circumstance regarding it which will at once commend it to favourable notice, and that is that it requires no other treatment in development and fixation than an ordinary gelatine dry-plate. The company claim that one of their whole-plate cameras, provided with six charged slides, weighs only 8 lb., and that any other camera, with the same equivalent of glass plates, weighs 20 lb. But we can hardly accept these figures as being true of all the apparatus in the market.

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VERGARA'S patent dark slide, which has been contrived specially for the Woodbury tissue, is a really very ingenious piece of work. Outwardly it has the appearance of an ordinary double back for glass plates, but it is half the width, and does not open. It is charged with tissue by the removal of a central partition. Over this a piece of the tissue is bent, and the partition is restored to its place, carrying the material into position, ready for two exposures. Owing to this arrangement, the tissue is made up in boxes of two dozen—that is to say, there will in such a box be one

dozen actual pieces of sensitive material—but each is destined to receive two exposures. For development, the company recommend an adaptation of Beach's formula. We hope shortly to give the tissue careful trial, and to report upon its behaviour in our hands.

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TOURIST photographers are now so numerous that the time has happily gone past when a weary, dust-laden camera-bearer had to leave his burden somewhere before he applied for lodgings for the night, in case he should be rejected as a wandering pedlar. But there are still many places where, apparently, the innocent photographer is looked upon with the eye of suspicion. In the private grounds through which tumbles the magnificent West Lynn, at Lynmouth, and which are open on certain days to the general public, the admission of a camera is forbidden. At the pier at Deal no photographer can pass the barrier unless he consents to pay a fine of half-a-guinea for the first day and three-and-sixpence on each subsequent day. This was at any rate the case last year, as we learnt by personal experience. As there is nothing attractive about the view of Deal from the sea, which of late years has lost all its old picturesque charm, and as there is very little shipping within photographic distance, we turned our backs (and double backs, too) and went away. Surely this is short-sighted policy, for in these days if a man takes a good picture he attracts many to the same spot. At Lowestoft pier all is different. The picturesque harbour at its side is full of life, shipping, and general animation. A fee of one penny franks a man and his camera there for a whole day, and he may go off and on with his penny ticket as often as he pleases. We say, therefore, to our readers who want to photograph marine subjects, shun Deal and patronise Lowestoft.

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THERE was some little excitement at the latter place a few days ago in the shape of a disastrous collision. How it occurred is a matter for wonder, for the morning was clear and bright. The two steamers who were the performers belonged, it seems, to the same fleet, and approached one another to exchange remarks. However, one of them was cut down to the water's edge, and had to run for dear life to the beach. Then, out came the photographers. Every visitor to Lowestoft seemed to possess a camera, and these were soon crowded together taking shots at the wreck of the *Erasmus Wilson*. Luckily the weather continued fine, and after a good deal of patching up the vessel was towed into harbour, probably the most-photographed craft in the kingdom.



## STELLAR PHOTOGRAPHY.

BY C. RAY WOODS.

## I.—INTRODUCTORY.



WITHIN the last few years, photography has found such an extended sphere of usefulness in connection with astronomical work as to stamp it, in the opinion of competent judges, one of the most important powers which the astronomer of the future will have to bring to bear upon intricate lines of research, if not into the more immediately practical routine on which so much of the world's commercial interests depends. When the photographer's sheet-anchor was the old wet-plate process, with its comparative slowness, the limited time during which a plate could be exposed, and the uncertain manipulations attending it, the few pictures taken by such early workers as Rutherford, Draper, and De la Rue, were comparatively rare scientific curiosities: of late years, the beautiful pictures of nebulae taken by Mr. Common, the brilliant star-clusters that MM. Henry have taken at Paris, and the less striking, but perhaps as important, photos taken in other parts of the world, have robbed the phrase "Stellar Photography" of the wonder that formerly accompanied its sound, and has rendered it even commonplace. We have our rapid plates; we can expose them as long as the duration of the night and the clearness of the atmosphere will permit; we can develop them at our leisure. We want just a few things more—but these few things are big things, and without them we cannot remove the obstacles that block the path—we want plenty of good instruments *specially constructed* for photographic work, plenty of efficient workers to use them, and plenty of time. Could we get these, the progress that the next century, nay, the next generation, might see, would render the present state of the oldest science only comparable with the social, political, and commercial state of the world before the age of steam.

The first question that the reader will ask, however, is—What is the precise nature of the work to be done?

The answer that most readily rises to one's lips is—Let us make a gigantic survey of the heavens; let us photographically map out the stars on as large a scale as possible, with the finest instruments we can get, taking in all the stars that modern appliances and methods will allow, and then—let us bequeath the magnificent legacy to a future age.

A good project! an admirable project! but, alas! it is just at present a little beyond our powers. The day is not far distant, it is to be

hoped, when such a piece of work will be seriously taken in hand; but, as the artist must get his canvas, and then prepare it, before he can paint his picture, so has the modern astronomer to see that any such undertaking as is being talked of so glibly in scientific circles, *must* be established on a firm, solid basis. Even in the northern hemisphere, where observatories are far more numerous and the state of astronomical science more advanced than in the southern, to attempt to map the heavens with instruments approaching in magnitude—say, that of Mr. Common—is not yet practicable; even the great catalogue of Argelander, containing, as it does, over three hundred thousand stars, would not be found to afford a sufficient basis to enable the work to be prosecuted with certainty. To map the heavens, however, on the scale contemplated by Admiral Mouchez with such an instrument as he has been using lately, made by the Brothers Henry, is a project reasonable enough, and which, it is to be hoped, will be speedily commenced. Leaving this plan to be discussed in another article, and taking into consideration the southern hemisphere, it is first of all necessary to bring the star-mapping up to the same standard that Argelander accomplished with the northern. Moreover, not only is this necessary as a foundation for a more extended piece of work, but it is badly wanted for general astronomical requirements. And this point brings us to the work which Dr. Gill, her Majesty's Astronomer, aided by a grant from the Royal Society Research Fund at the Cape, is having carried out at the Cape Observatory.

Argelander's Catalogue contains all stars up to magnitude 9.5. In order to simplify the work he employed a telescope of only three inches aperture, and limited his catalogue to stars such as could be observed by that telescope. To have gone much beyond the limit he set down would have so enlarged the work and lengthened the time of its accomplishment as to materially reduce its usefulness. As it was, the work took himself and two other skilled astronomers ten years to accomplish. In planning his operations Dr. Gill had first to consider what would be the most suitable lens to use. It was necessary that the lens should embrace a fairly wide angle, in order that each plate might with certainty contain comparison stars shown in Stone's Catalogue and Gould's "Uranometria Argentina," the most useful catalogues we have of the Southern stars; that it should be rapid, and that it should give as little distortion as possible. A "Dallmeyer Rapid Rectilinear" appeared most suitable for the purpose, and, Mr. Dallmeyer having lent him one of six inches aperture, experiments were made early in 1885 as to its capabilities. It was found that in this combination, without a stop, images near the



margin of a field larger than six inches square are not found to be exposed. With the full aperture of the lens, it was not advisable to use plates larger than six inches square. As the equivalent focus of the lens is about five feet, an arc of one degree covers about one inch of space on the plate. Each plate, therefore, shows a portion of the sky equal to six degrees square, or thirty-six square degrees—a much larger area than has been covered in any star-pictures that have, up to the present, been taken elsewhere.

The accompanying diagram (Fig. 1) represents a small portion of the sky round the South Pole.

The first square takes in the Pole and three degrees round it. The zone of  $-85$  is divided into squares that shall give one degree overlap (one inch on the plate) at the side farthest from the Pole; at the nearer side, the overlap is more considerable. The next zone  $-80$  is divided up in a similar manner, and so on throughout the series up to the equator, where a comparison may be made with Argelander. We thus get twelve plates for the zone of  $-85$ , sixteen plates for the zone of  $-80$ , twenty-four plates for the zone of  $-75$ , &c., the total number for the whole southern hemisphere amounting to nearly one thousand. But

in all stellar photographs that have been taken it has been found that small specks of dust, photographic defects, &c., might be mistaken for faint stars. Two methods have been adopted for overcoming this drawback. One method is to give two exposures on the same plate, after slightly altering the adjustment of the instrument so that each star shall appear double. This was the plan adopted by Rutherford in the photograph he took of the Pleiades. MM. Henry has gone a step further in some of his photographs and obtained three exposures on each plate. With crowded

clusters, double and triple stars, &c., this plan will probably lead to confusion. The other method is to take two exposures on different plates and compare them afterwards by measuring them at the same time, or by superposition. The first method means a saving in the consumption of plates, but as no time, trouble, or patience (*the most considerable items to be taken into account*) are saved, the extra cost of plates may be disregarded—it is a mere bagatelle. Moreover, should one plate be defective from any of the causes or accidents to which photographic manipulations are liable, only one exposure is thrown away—not two or three.

Having planned out the chart of the heavens into squares, and arranged the exposures for different portions of the sky, so that they can be pieced together to form one perfect whole—having, in fact, decided what part of the heavens shall be taken on each plate, and the particular part of the celestial sphere that is to occupy the centre of it, the next question to be considered is, How is this plan precisely and practically carried into execution? And here it will be necessary to present a brief but clear description of the instrument that is being used

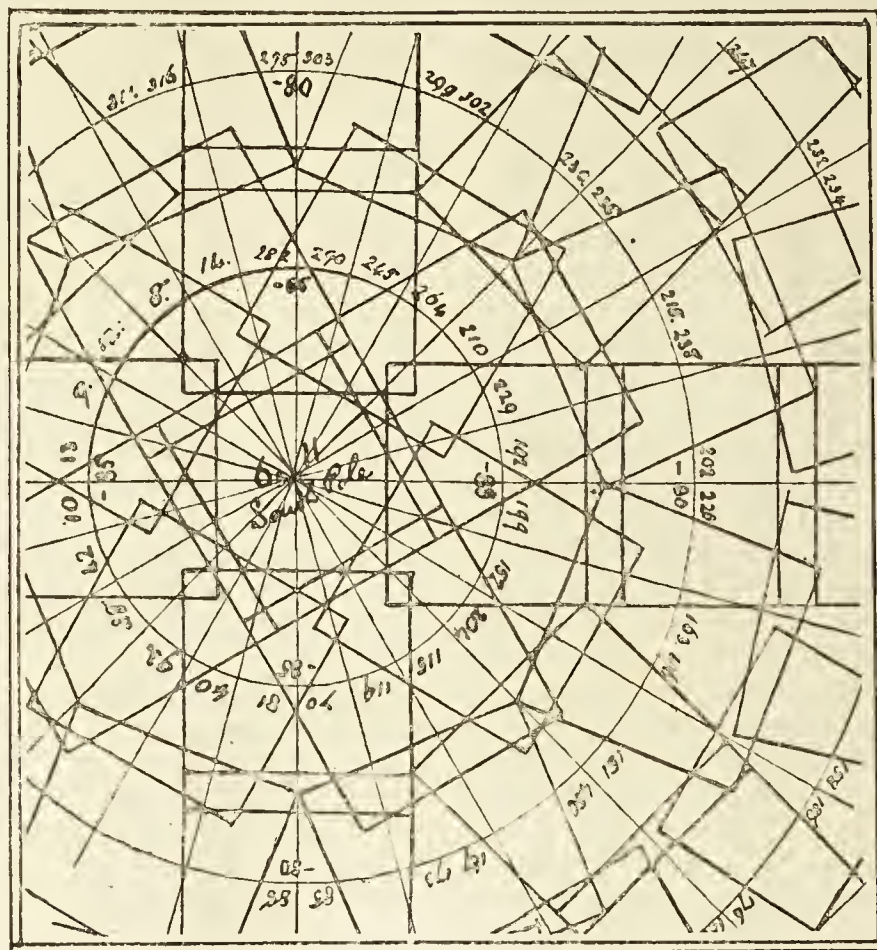


Fig. 1. Portion of the sky round the South Pole, mapped out in squares. The numbers in the centres of the squares correspond with the numbers scratched with a diamond on the back of the exposed plates.

at the Cape Observatory. Fig. 2 will assist in elucidating the text.

The instrument proper—that is to say, the camera and accompanying telescope—is mounted on an equatorial stand which I must describe in principle, for the sake of your non-astronomical readers, even at the risk of appearing too prolix. An equatorial may be briefly described in principle as a telescope free to move round an axis parallel to the axis of the earth; this is called the POLAR AXIS. Now, the North and South Poles of the celestial sphere are defined as “the points where the terrestrial poles would pierce this sphere, if



they were long enough"; and the distance of the earth's surface from its centre being so *immeasurably* small compared with the distance of the nearest stars, we may regard our equatorial's POLAR AXIS as actually pointing to the Celestial Poles. (It may be added here, in a parenthesis, as it were, that the word "immeasurably" is no mere phrase, but an actuality; no instrument hitherto constructed is delicate enough to measure so small an angle as the earth's diameter makes with a fixed star.) But one more motion of the telescope is necessary in order that we may point it to any particular star or point of the heavens we wish. Attached at *right angles*, therefore, to the POLAR AXIS we have another called the DECLINATION AXIS, and on this latter the telescope or camera is mounted. Attached to each axis are graduated circles, which enable us to "read" what part of the celestial sphere our instrument is pointing to. To further simplify matters, we may say that our DECLINATION AXIS gives us the means of pointing our instrument to any particular latitude or zone of the heavens, or conversely to determine what latitude it is pointing to; further, that our polar axis, with its graduated circle, called the "hour circle," gives us the means of pointing our instrument to any particular longitude of the heavens, or conversely, as before.

Now let us imagine that we wish to photograph

a portion of the sky, one particular point of which is to occupy the centre of the plate. We point our instrument by means of the movement in declination to the correct latitude or zone; then we point our instrument, by means of its movement on its polar axis, to the particular longitude. Imagine further that we have some means of making our polar axis revolve round once in

twenty-four hours in an *opposite direction to that in which the earth revolves*. It is obvious that, for all practical purposes, the telescope or camera will be actually standing still, and always pointing to the same part of the heavens. Now, in an equatorial stand, we actually carry this into effect, for part of the twenty-four hours at least, by means of a driving-clock. Not perfectly, it is true: the *best* time-clock is a poor instrument compared with the heavenly bodies we set and correct them by, and a driving-clock is a poor instrument compared with a good clock for keeping time. What the clock is deficient in, therefore the observer must supply. He does it in the manner following.

Attached to the camera in the foregoing illustration is a telescope.

In the eye-piece of

the camera is a small projecting piece of brass, with a fine pinhole bored in it, the pinhole coming in the centre of the field of view, the field of view being illuminated by means of the lamp shown in the illustration. A more common method is to use

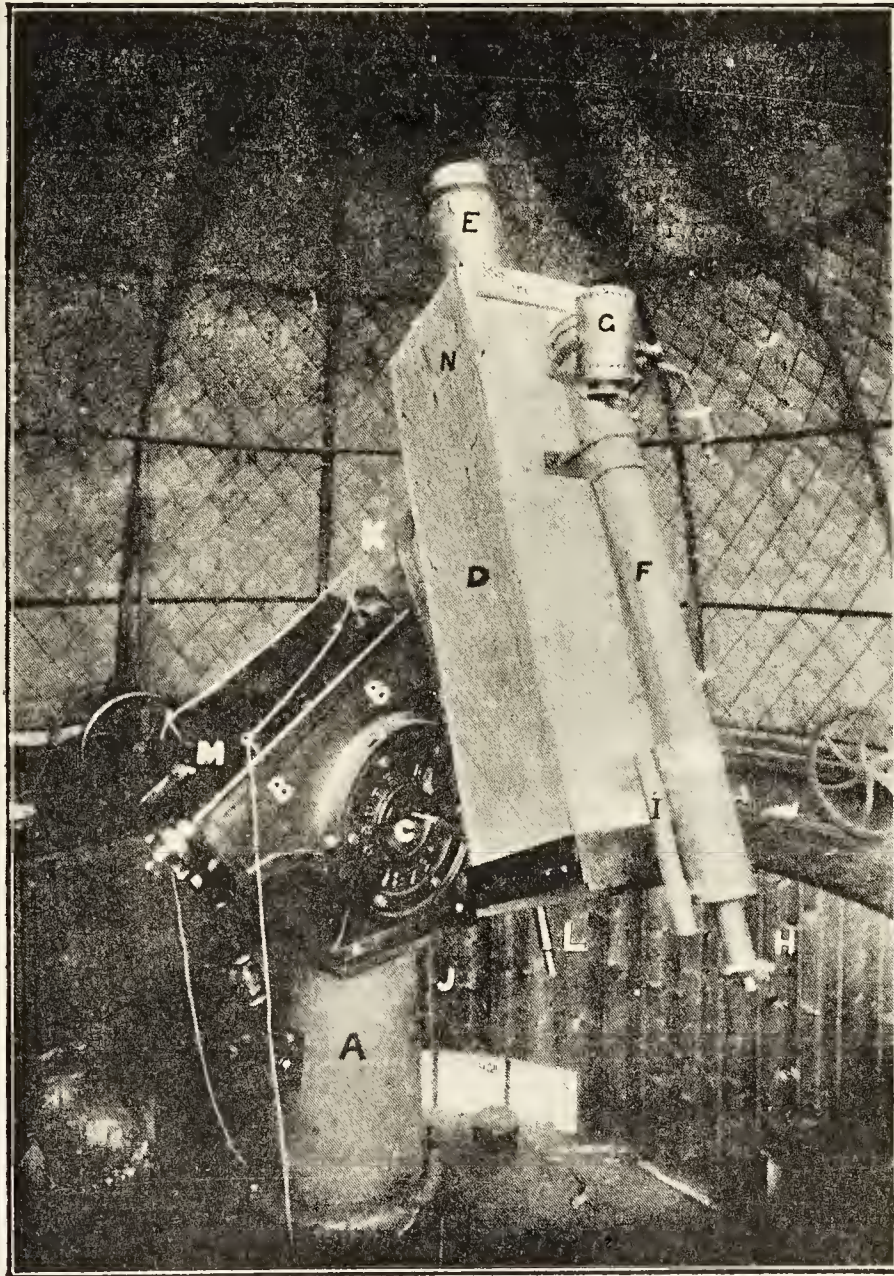


Fig. 2. Instrument at present in use at Royal Observatory, Cape of Good Hope, for photographing the stars:—A, heliometer stand; BB, portion of stand containing Polar axis; C, handle for winding up driving-clock; D, camera; E, six-inch Dallmeyer rapid rectilinear lens; F, three-inch telescope for guiding; G, lamp for illuminating eye-piece; H, Micro-meter; I, small finder to three-inch telescope; J, Cords for correcting driving-clock; K, cords for clamping in right ascension; L, telescope for reading declination circle; M, portion of hour circle and vernier.



cross wires in the eye-piece ; but, as these must be fine spider webs, they are liable to accident, and, moreover, they require more illuminating power, an important consideration when the guiding star is a very faint one. Another method is that recently adopted by Dr. Lohse, of Potsdam, who uses a series of concentric rings. These rings, it need scarcely be said, are scratched on glass with a diamond, and rubbed in with luminous paint. Dr. Lohse avers that greater accuracy can be obtained than by the pinhole method. Not having tried the method, the writer cannot state a trustworthy opinion of its value, but can only assert that the pinhole method is more accurate than the lens, and this photographic development is capable of fully recognising. A star is allowed to come in the centre of the pinhole, and should it not stay there, should it move to one side or the other, the observer, by means of two cords acting on a set of wheels connecting the driving-clock with the polar axis, is enabled to make the necessary correction.

There is one point more to be touched upon, and then the writer trusts that he will have made the whole method of working perfectly clear.

The centres of the various squares are not stars, they are points on the celestial sphere, points, definite points, fixed on independently of the stars themselves. To find a star exactly on a point fixed independently would be an astonishing rarity.

How, then, are we to get a star in the pinhole of the telescope whilst the camera is pointing to the spot fixed on beforehand ?

This is done by means of what is known as a "Micrometer Eye-piece." The eye-piece is inserted in a piece of apparatus, which allows it to have a motion in a radial and also a circular direction, just as a photographer might examine, with his magnifier, any part of his ground-glass. With the particular micrometer attached to the telescope in use, we are thus able to get into the middle of the pinhole any star within half a degree of the central point of the picture. From existing star-catalogues the nearest and brightest star to the centre of each picture is selected, and its position in relation to the centre is calculated for the micrometer, which has its circle graduated and a scale to indicate its radial distance. If no star within the limits of the micrometer is to be found in any star catalogue, the observer has then to set his instrument and pick out the brightest he can find (necessarily a faint one in such cases) and note its position. The observer has then only to adjust his telescope, adjust his micrometer, set the clock going, and—well, the rest *sounds* easy enough—keep the star in the centre of the pinhole ; but, as this is a tedious and melancholy operation, only a consciousness of the great

value and importance of the work would keep an observer from feeling life to be a burden and a misery.

Of the results obtained during the fifteen or sixteen months during which the Cape photographs have been taken, it may be stated that the whole of the stars from the South Pole up to 33 deg. around it have been photographically mapped. Within less than ten years not only will, it is expected, the Southern Hemisphere have a catalogue equal in value to Argelander's Catalogue of the Northern Hemisphere, but the scientific world will also possess a facsimile representation of the heavens at the present epoch, a series of images imprinted by the stars themselves, the value of which will, like good wine, increase with age, only more so.

It was found originally that in order to equal Argelander's catalogue of the northern stars, one hour's exposure was necessary for each plate, and that a more accurate comparison made recently has demonstrated that in one portion of the sky comparatively poor in the number of stars, where Argelander gave only a few stars, the photographs were rich in them. With richer portions of the sky a very much larger number would appear, but taking the modest average of 500 for each plate and multiplying it by 1,000, the number of plates, we get at a catalogue of the Southern Hemisphere containing no less than 500,000 stars. Nor must the reader lose sight of the fact that the apparatus shown in the illustration is only a temporary arrangement. By every mail is expected a new instrument, the funds for which have been supplied partly by Mr. Nasmyth, partly by the Government Grant Fund, and partly from Mr. Gill's private purse, an instrument which will be mounted on the same stand shown in the illustration—a beautiful stand, with good clockwork constructed by Grubb, and used so successfully by Dr. Gill when it bore the heliometer with which he took the observations so honourably connected with his name. This instrument will comprise a six-inch Dallmeyer Rapid Rectilinear of five feet focus, similar to that at present in use, but *made especially for stellar photography*, a nine-inch object-glass of nine feet focus by Grubb, of Dublin, and a four-inch telescope of ten feet focus with suitable micrometer. Of these I shall have something further to say at some future time. Nor must I forget that I have said nothing as yet concerning the photographic magnitudes of stars, the method proposed for the measuring of our present photographs, the scheme of M. Mouchez, and other matters.

But "sufficient for the day is the evil thereof." I am afraid of tiring the patience of your readers by too long a disquisition all at once, so for the present I conclude.



## MACHINE-MADE DRY PLATES,

BY THE EDITOR.



F the many thousand persons who daily use gelatine dry plates, few give thought to the manner in which those dry plates are manufactured. They choose for themselves one particular brand which, in their opinion, excels every other plate in the market, and so long as they can obtain as many plates as they require they are satisfied. Busy professional photographers have plenty to do, they will say, without troubling themselves about the manufacture of plates. Some have tried to make their own, and even if they have succeeded in the work, they are compelled to acknowledge that the plates so made, counting time and material, are far more expensive than those which can be bought ready made. It is now a universal law that familiar things in daily use can be made far more cheaply, and, as a rule, more reliably, in a wholesale manner by machinery than they can by the consumer himself with his own hands. As a case in point we may instance the lucifer match manufacture. They are easy enough to make, but far cheaper to buy ready made. So it is with dry plates used by photographers. They can be made at home—and easily made when one has had a little practice—but it is far cheaper to buy them ready prepared. An immense trade has now sprung up in these plates, and factories for their preparation in huge quantities are now dotted all over this and other countries. Machines have been designed for manufacturing dry plates which, if not quite so intricate and delicate as those necessary in the manufacture of watches, display a great deal of originality and ingenuity. There is one point in which this industry differs from all others. The whole of the operations have to be conducted in a dull red light.

We will presently follow the various operations comprised in the wholesale manufacture of gelatine plates as conducted at the Paris factory of M. Hutinet; but before doing so, it will be as well to consider briefly in what a gelatine plate consists. We all know that it is practically a sheet of glass coated with a layer of composition, of which gelatine forms a part, which is intensely sensitive to ordinary light. To make this composition, to spread it on the glass, to dry the plates so made, and to pack them for the market, is a series of operations requiring at every point the greatest care, and these operations comprise the work done in a dry-plate factory. First, as to the making of the composition, or emulsion, as it is termed while it is in a liquid state, ready for application to the glass plates. The emulsion consists of bromide of silver mixed with gelatine and water. It would

seem, perhaps, a simple matter to take two such compounds and mingle them together. But, in reality, the mixing of an emulsion is a most delicate chemical operation, requiring both judgment and care at every step, and is conducted in the following manner:—

There are many different formulæ recommended by different workers, and the one here given is a fair sample of them. Mix, in a suitable vessel,

Ammonia bromide.....	120 grains.
Gelatine .....	30 „
Water .....	4 ounces.

The gelatine is allowed to soak in the water until it has become flaccid, then the bromide of ammonia is added, and the vessel put into a water-bath—glue-pot fashion—until the gelatine is perfectly melted. In the meantime, 200 grains of silver nitrate are dissolved in three ounces of distilled water, in a separate vessel, and this latter, too, is placed in the water-bath. When the contents of both vessels have had time to assume about the same temperature, they are taken into the dark room for the purpose of being mixed together; for directly they are mingled the resulting compound is sensitive to white light. The silver solution is added to the other in a fine stream and with constant stirring, the emulsion thus made having the appearance of milk. Next, the newly-made emulsion is placed once more in the water-bath, and the water is raised to boiling point, and is allowed to boil for a period varying from half an hour to two hours or more. Certain tests can be applied to ascertain when the mixture has been boiled sufficiently. After this it is cooled down to about 90° Fahr., and 270 grains of gelatine are added to it, to give it sufficient stability and setting properties. The emulsion may now be put aside to get cold, when it will set into a firm jelly, like *blanc-mange*.

The milky appearance of the emulsion when the silver is added to the bromide of ammonia solution is due to the formation of bromide of silver. This salt is insoluble in water, but its formation is accompanied by the formation of another salt—namely, nitrate of ammonia. This latter must be eliminated from the emulsion by an operation called washing before the compound can be used. The emulsion is therefore shredded into fine pieces, so that it can be attacked upon a number of different surfaces, and is treated with many changes of water, by means of appliances which it is here not necessary to describe. After this washing operation the emulsion is drained, melted by heat, carefully filtered through wool, cambric, or leather, and is then ready for spreading on the glass plates, which are ultimately to become photographic negatives.

Many workers hold the opinion that the real difficulties of making dry plates commence with



the operation of coating the glass plates with the emulsion. The glass plates must be carefully cleaned, and be perfectly free from dust. A pool of emulsion is poured upon each plate, and spread over the surface with a glass rod. The glass is then placed on a carefully-levelled surface until the gelatine coating has set, and it is afterwards placed in a rack until its surface is hard and dry. This, very briefly described, is the manner of plate-coating by hand. At M. Hutinet's, as in most large factories, hand-labour has been superseded by machinery. M. Hutinet's coating-

stream to an open glass cylinder, which is perforated on its lower part with several holes. The emulsion oozes through these holes, and spreads itself thickly over a rubber roller below. It is this roller which lightly presses upon the glass plates, that are caused to travel on the endless band, and which applies the emulsion to them in a thin, even layer.

The plates of glass are of such dimensions that when coated and dried they can be cut up into the different standard sizes without waste. The great length of the coating-machine is for the

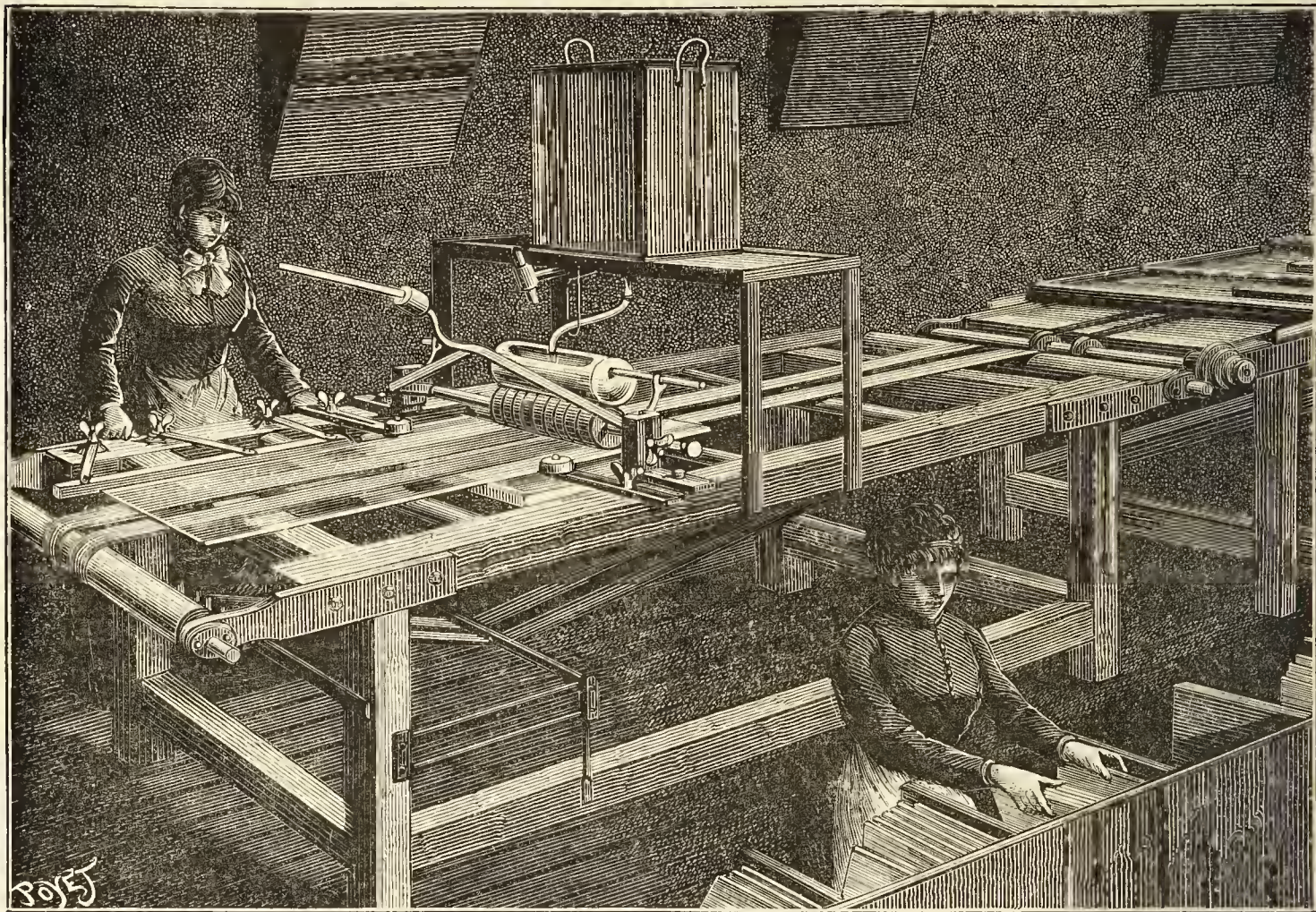


Fig. 1.—Machine for Coating the Glass Plates with Emulsion.

machine is illustrated in Fig. 1, and we will now describe its various parts.

The machine has the appearance of a skeleton table about sixty feet in length. Upon its upper surface are endless bands, which are constantly travelling with a slow motion from right to left, the said motion being kept up by a small engine. Above the table will be noticed a raised platform, upon which stands a square vessel. This is a hot-water cistern, which forms a water-bath for an inner vessel, containing several gallons of emulsion. From this vessel a pipe, fitted with a glass stop-cock, conveys the emulsion in a regulated

purpose of giving each plate after coating a long journey on the endless bands, during which it is kept quite level while its gelatinous coating has time to set. In many of our English factories the machine is much less in length, and the setting operation is hastened by causing the plates to travel at one part of their journey through an ice tunnel—that is to say, a passage with its metal walls packed with ice. The machine is generally so arranged that the plates are delivered by the endless bands into another apartment, where they can be arranged in racks until they are dry. Mr. Hutinet's drying-room, fitted with racks for holding



the plates, forms the subject of our next illustration (Fig. 2).

Several precautions must be observed in drying gelatine plates. Heat is not so necessary as the provision of a current of dry air, and the escape of that air when it has taken up moisture from the gelatine. But, in a climate like that of England, dry air is a luxury which is not very common, and most makers find it necessary to dry it by heat before it is admitted to the drying-room. In M. Hutinet's room it will be noticed that the floor is made of perforated iron plates, and that underneath these plates steam-pipes, for the drying of the air, are placed. The air is drawn direct from the outside of the house, so that it is perfectly pure. The spent air, now charged with moisture from the plates, finds an exit through apertures above the racks.

These exit places are in connection with the chimney of the heating apparatus, so that there is a constant draught, which draws the used air away, and causes fresh air to rise from the floor in its place. The plates are disposed in the racks with their coated side downwards, so that no dust particles can fall upon them. By the arrangements described, the racked plates are dried and ready for further treatment in about ten hours.

(To be continued.)

## BLUE PRINTS.

BY WALTER E. WOODBURY.



AFTER reading farther into this article, the reader will perhaps be inclined to think that the above title is rather a misnomer, as I intend describing not only the making of prints of a blue colour, but also certain modifications by which the blue colour characteristic of the ferro-prussiate print can be supplanted in favour of other and more agreeable tones. Not that there can be any objection to the blue colour ;

on the contrary, I have seen pictures from soft negatives of a rich, intense blue, that were really charming. Not only is this process of great use in the offices of civil engineers and architects for obtaining copies of plans, but also to the amateur, for quickly obtaining a print from a negative, when the trouble necessarily involved in suddenly undertaking the large number of operations required to produce a print by the ordinarily-adopted method would be too great. The blue process of printing is based upon the following facts: *Per*-salts of iron (ferric salts) exercise a totally different action upon certain substances from that of iron *proto*-salts (ferrous salts), and these ferric salts are sensible to light in consequence of the exposure which reduces them to ferric salts. Almost all the iron printing

processes were discovered by Sir John Herschell. In 1842 he first made public a process to which the name of "cyanotype" was given.

In this process ammonio-ferric-citrate and ferro-cyanide are used, and it is the one by which nearly all the commercial papers are made.

The following two solutions are first prepared:—

Water ... 100 parts.  
Red prus-  
siate ... 12 ,,

Water ..... 60 parts.  
Iron salt ..... 10 ,,

These separate solutions can be made in the daylight; but mixing must be done in the dark, as well as all subsequent operations. After mixing, the solution is poured into a flat dish, and the paper floated upon it for a few minutes. It is then taken hold of by two corners, and drawn lightly over a glass rod fixed across the dish, and hung up to dry.

Another method of preparing is the following:—Lay the paper to be sensitised upon a table or smooth board, the corners being kept down by means of drawing-pins. Every precaution to ensure cleanliness should be adopted. Having poured a quantity of the sensitising solution into a cup, a broad camel's-hair brush is dipped into



Fig. 2.—The Drying-Racks.



it; and by a few bold strokes of the brush in one direction, the mixture is applied to the paper. Never mind about the streaky appearance that it will assume, as this will all disappear in drying. This coating operation should be done in as weak a light as possible, and the drying in perfect darkness. After it is dry, the paper, if kept carefully preserved from light and moisture, will remain good for a great length of time.

In printing, the paper is cut to the size required and exposed to the light under a negative or a drawing in the printing-frame as usual. If your negatives are 5 in. by 8 in., print on a large sheet of paper, say, 8 in. by 10 in., masking all but the part you wish to print; this will give you a large white sheet, with the picture in blue, in the centre, and has a very neat and artistic appearance. Printing requires from about five to ten minutes. When sufficiently printed, the dark parts will appear of a yellow colour. After being taken from the printing frame, the prints are fixed by simply washing in several changes of water, to which a few drops of chlorine water or dilute hydrochloric acid are added. This addition will give the blue a much darker tone, and render the white parts clearer.

It will, perhaps, be as well to mention here that, while soft and beautiful effects can be obtained upon plain paper, if a brilliant print is required, it is necessary, as with silver prints, that a strongly-sized paper be employed. The various methods for sizing the paper employed for this purpose are albumen, starch, arrowroot, and gelatine. These blue prints can, if desired, be changed into a beautiful black colour. Prepare for this purpose the following two solutions:—

- |                      |            |
|----------------------|------------|
| (1) Water.....       | 100 parts. |
| Caustic potash ..... | 4 „        |
| (2) Water .....      | 100 parts. |
| Tannin .....         | 4 „        |

The prints are, after leaving the washing water, immersed in solution No. 1, when the blue will be observed to be changed into a yellow. As soon as this transformation has taken place they are taken out, and, after being washed, are placed into No. 2 solution, until they are of a satisfactory black colour. They are then removed, washed, and hung up to dry. It often happens, more especially in summer, that prints become overprinted, the blue colour assuming a dirty-greenish appearance. These prints can be effectually saved by first of all being placed in a weak solution of caustic potash for a few minutes. They are then immersed in a weak solution of hydrochloric acid, when they will once more appear of a blue colour. This method is due to Herr Himey.

If desired, prints of a sepia colour can be made, but for this a differently-prepared paper is necessary. The method of obtaining these was pub-

lished very recently by Dr. Vogel, and, as I have myself succeeded with it, I have no hesitation in giving it here:—10 parts of potassio-ferric oxalate are dissolved in 100 parts of water, and the paper prepared with it. After printing, the paper is developed in a one-per-cent. silver bath. Prints so developed are of a deep sepia tone. Up to the present I have spoken of processes by which those parts of the paper that are exposed to the light become fixed, while the other parts are washed away. I shall now refer to a process in which an entirely opposite effect is produced; that is to say, those parts that have become exposed to the light, become after development white, while those portions that have been shielded from its action become blue. By the former method, in copying pen-and-ink sketches or architects' plans, the results obtained are pictures in which white lines are formed upon a blue ground. In the latter, however, the image would be represented by blue lines upon a white ground. The advantage, therefore, of the latter over the former is undoubted. In order to obtain this opposite effect it is necessary that the action of the light should be to convert the iron compound into one that can be discharged from, instead of being fixed in, the paper. Paper is first coated with boiled starch, so that the solution will not sink into it, but remain upon the surface. This is floated upon the following solution:—

Chloride of iron .....	10 parts.
Citric acid .....	5 „
Water .....	100 „

The exposure required varies from one minute in the sun up to half-an-hour or so on a dark day. As in printing the visible change is very slight, it is necessary to have some means of ascertaining when the print has been sufficiently exposed. To obtain this the following must be resorted to:—A few strips of the sensitised paper should be placed under a piece of paper similar to the one upon which the drawing or design is that you are printing from. One of these strips should from time to time be taken away and placed in the developer, which is made with a 25 per cent. solution of yellow prussiate. When one of these strips develops perfectly clean and white the print is sufficiently exposed. It is then developed by floating it upon the surface of the developer. Great care must be taken that none of the developer is allowed to touch the back, as it would cause a stain. Air-bubbles must also be avoided. After the paper has been allowed to remain upon the surface of the developer for a few seconds, it should be quickly drawn from the solution and held in a vertical position, till sufficient density is obtained; it is then washed in water, and immersed in an eight-per-cent. solution of hydrochloric acid, and is finally



thoroughly washed, and dried. Blue spots, which often appear upon the white ground, can be afterwards removed by touching with a solution of potash. This solution can also be effectually used for removing stains from the hands. Of course, this paper cannot be used for printing from a negative of a portrait or landscape; for such a purpose a transparency or positive will be necessary.

## COMPOSITION.

BY JOSEPH HARRIS.



IF any one of the items which in the aggregate compose the noble army of photographers were asked what form of composition he most affected, the unhesitating reply would be in favour of that which he would designate as the "pyramid." He will go for the pyramid in a group of three and in one of thirty; he will pronounce for the pyramid when immortalising the pale-faced curate sprawling over a fur rug, and in the cabinet three-quarter of "the maiden of bashful fifteen," there is still another pyramid.

It is astounding what a profundity of artistic lore, what a wealth of artistic culture and knowledge, and what a sublime power in composition may be obtained by the perusal of a shilling hand-book on art. French, without a master; Hebrew acquired between the scrapes of the razor, while undergoing the matutinal shave; music and thorough bass, by simply turning a handle; all these studies are as child's play compared with the magnificent results to be achieved by enriching the mind with a shilling's worth of pyramid. With some dogmatists on the pyramid one would imagine that to them in that one word lies the Alpha and Omega of all education—know the pyramid, and there is nothing else to learn. This is the sort of testimonial we shall be favoured with presently:—

DEAR SIR,—I have airily skimmed your invaluable volume. Yesterday I knew nothing about art, and to-day my capacity in drawing is limited to a truck; still, I cannot forbear expressing my opinion on the value of your work. I can beat anybody at pyramids on the shortest notice.

Suppose, for example, a cultured pyramidist has to take a group of a dozen people. We shall have presented for our admiration a leading pyramid somewhere near the centre; there will be a pyramid to the right, and there will be a little pyramid on the left; pyramidal forms will intersect each other in such painful prominence all over the plate that the eye sees nothing but equilateral and isosceles triangles. There is a time for everything, even for mathematics. No sooner has one triangle

been discovered than another Hydra starts to view, and the spectator questions if there be no other arrangement than the triangular. This species of formality is termed by its authors, the "photographic artists," Composition!—the pyramidal form after a study from Wilkie! If it were only after Wilkie Collins, we might be treated to some variety of theme, and if the variety bordered on the sensational, it would be a welcome relief from monotony.

There is extant a certain woodcut in a certain manual; of a surety the woodcut illustrates the pyramid. Would it be flat blasphemy to designate it the Great Pyramid? A lady is reading a letter at a table—we cannot compose without "that table." At one corner a gentleman is seated on a very low chair, so low that the picture cuts his hands off. And now comes the inevitable pyramid. On the right, a standing figure resting both hands on the aforesaid table, and bringing down the arms in such a manner that they form two elegantly-beautiful *parallel* lines. And this is "Composition" by a master! Heaven help the pupil, for earth never will!

The first lesson in Composition should be on the avoidance of parallel lines formed by legs, arms, or accessories in the picture. And the moment straight lines can be traced in the extremities of the human figure, or by aid of the extremities and the composite surroundings, that moment something is wrong, and it must be altered. The thing will never be a composition, no matter how many pyramids or series of pyramids blend, intersect, or mingle. Avoid all angularity in the arrangement. Angularity is another name for formality. Study the line of beauty, a graceful flow of line throughout the theme.

Try another illustration out of the same book before referred to. The subject is a group. There is a big pyramid of faces outside; a straight line may be run along the tops of four heads. Inside we have a smaller pyramid with four heads in another straight line. Nearly parallel with these four heads are three others on the "outside edge," and the little pyramid in by way of makeweight for previous shortcoming contains three more heads illustrating "length." The less said about "breadth" the better.

The finest exercise in composition is to draw the human figure. If the novice cannot hold a pencil, so much the worse for him, so much the more difficult his task. He may observe by the eye the inception of the beautiful by others, but he cannot create for himself; his hand is powerless to fashion perfection of human grace and attitude. Such and such a pose may be pleasingly effective. Why? How can the non-practical man expect, or how can he be expected, to extricate himself from



the slough of photographic grouping when of his own knowledge he is ignorant of every group except the photographic one? The talk, therefore, about balance and contrast is idle from the lips of such a person; it is simply so much parrot-like echo, so much repetition of the sentiments of others without ability to estimate the value of the correctness of those sentiments by practical experience.

Learn to draw the human figure, and certain attitudes only seen in photographs will be cast into oblivion. He who can draw possesses that power and mastery of his subject which will forbid him to loll his fellow-man against a brick-wall, hands in pocket, and elbows thereby forming offensive angles, while the feet, thrust forward from the centre of gravity, display parallel lines in the straightened legs. Familiarity with the ordinary drawing copies, to say nothing of study from the antique, would prevent the portrayal of such a lounge under the designation of a "pose," or as an example of pictorial art, even in photography. Granted that modern dress does not lend itself to grace of outline, all the more reason that, before a man takes liberty and license with proportions of which he has not the remotest practical knowledge, he should endeavour so to qualify himself by study that he may realise the beauty of outline concealed by modern garb, and so make the most of that beauty by aid of his mastery of the human anatomy.

It may be urged that this knowledge of drawing is by no means an essential for the photographer, that the critic may discharge his duty and yet lack the draughtsman's skill. There is no analogy in this comparison. The critic does not *create*, he rarely attempts an inception of his own, he merely awards praise or blame according to his judgment. But the photographer stands in a totally different category. *He pretends to create*: he who, as a general rule, cannot draw, will attempt one of the highest of artistic achievements, and he will qualify himself for this stupendous work by employing his leisure on so childish an endeavour as the "elimination of the effects of movement in a sitter," by some fanciful mode of development. Can he not consign the spoilt plate to the waste, can he not hand it to his retoucher that it may be made the best of? For the sake of his status as an "artist," as he is pleased to term himself, can he not condescend to forget such trivialities as the foregoing, can he not make an effort to rise in the vocation he has chosen by utilising every spare moment of time at his disposal in the cultivation of his hand, *that hand and eye may work together*?

To illustrate the limited ideas which photographers in general hold on composition, it will serve to recount a recent fact. A noted photographer was exhibiting a "bit" of landscape the

other day; there was nothing in it—a sedge bank, a pond broken up with water-lilies, some shrubs, and a flower-vase beyond. Of course, the detail was sharp and the definition exquisite. For these qualities the picture received due meed of praise. "Ah," quoth the "Knight of the triangle," "*did you notice the pyramid formed by the flower-vase?*" Now, this man's notion of success as applied to landscape photography was too evidently this limited and miserable one—that if the pyramid can but be discerned amid the intricacies of hedge and ditch, he has indeed achieved something which will entitle him to a niche in the temple of fame, something which will hand down his name to an admiring posterity—*of his own hands he has actually produced a pyramid!*

There is another shilling handbook which must be studied by the photographer before he launches into the triangle business—the "Elements of Perspective." Our photographer is too often above or beneath perspective, and instead of mastering his vanishing point, his point of station, and his point of distance, he resorts to the rule of thumb and the regulation guide-book, and therefrom repeats his lesson by rote, "the horizon line should, as a rule, be about one-third or two-fifths from the height of the picture, either from the top or the bottom." Either way, my little dears, you pay your money and you take your choice—in fractions, once more!

If the novice condescend to study perspective he will have little difficulty in deciding on his horizon line without uttering such barbaric nonsense as "a third or two-fifths from the top or the bottom." Perhaps the middle would answer equally well. Or, why not let the matter resolve itself into a problem for the benefit of the figure-lovers and those who wander in "fog." Given the horizon line at a third and two-fifths of a third from the bottom of the picture before the said picture has been stretched in the mounting, what is to be the position of the pyramid? —Q. E. D.

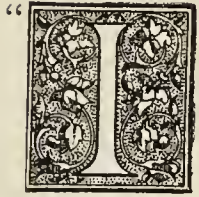
*Learn to draw. The power to compose will grow out of that acquired knowledge, and out of that alone, as surely as the blossom is the precursor of the fruit.*

Until the student can draw he *cannot* compose, unless he can write an oratorio without knowing a note of music. There is no shilling guide-book which will turn him out a ready-made artist. No two men see beauty from the same point of view. One man achieves success by *his* conception. To copy that work will bring neither rank nor fame to the copyist slavishly imitating a design which he, the copyist, *not having conceived, cannot feel*. Had that copyist but trained his *hand and eye to work together*, he, too, might have gained that exaltation for his genius which, as a feeble imitator of other men's "pyramids," he never can hope to attain.



## A CHEAP AND EFFICIENT PHOTOGRAPHIC STILL.

BY CHAS. A. PARKER.

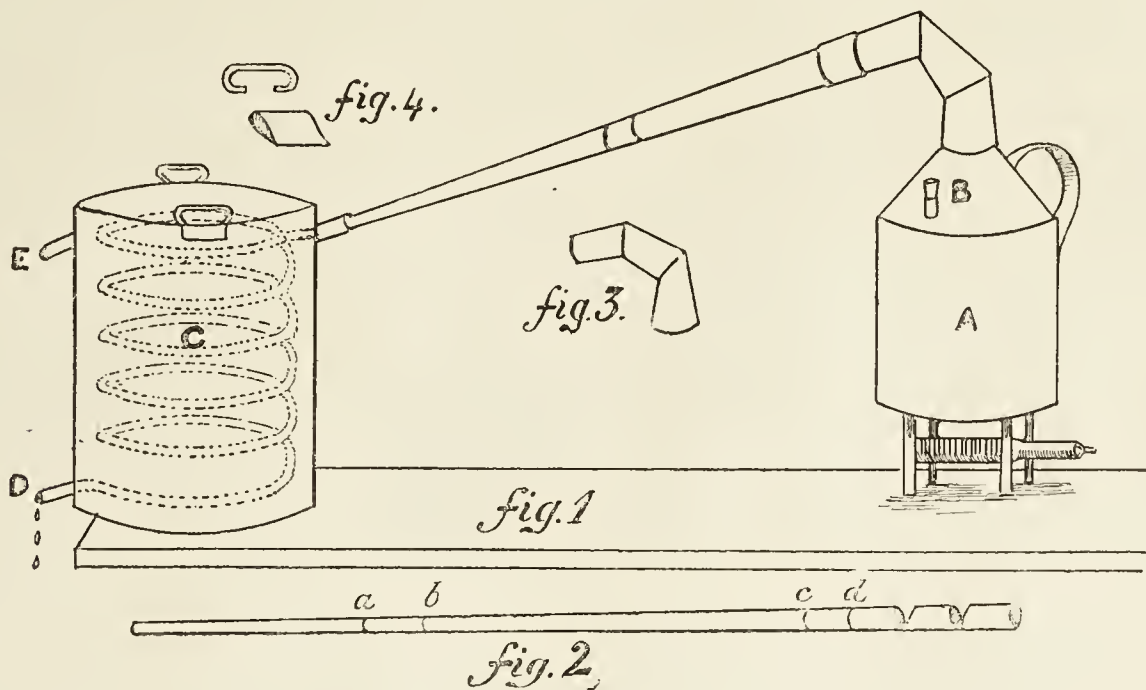


BELIEVE that there is something wrong with the developer." How often we have heard the above remark among our photographic friends; but what is it that is wrong? In nine cases out of every ten, when the chemicals are in the correct proportions, the failure might be traced to the use of ordinary tap water in making up the solution; therefore, as this most familiar of all liquids plays a most important part in photography, due care should be exercised in obtaining it as pure as possible.

(Fig. 1), contains half-a-gallon of water, which is poured into it through the opening, B, the orifice of which is afterwards closed by a tight-fitting cork. It is then placed over a moderate fire or a Fletcher gas-burner, and the worm-tub, C, is placed near it, and is connected with the body of the still by means of the tapering tube, two short pieces of vulcanised indiarubber being passed over the joints to render them steam-tight.

The worm-tub is then filled with cold water, which will have the effect of condensing the steam into water, and causing it to run down the spiral tube and out at the opening D, being collected in some suitable vessel placed beneath. The water in the tub must be renewed as it becomes hot.

Having given the general description of the apparatus, I will now proceed to give in detail



The water as supplied by the water companies contains matter chiefly of a mineral nature, which is held in solution, those impurities which happen to remain undissolved or suspended mechanically in it being the only portions removed by filtration.

The best possible manner of rendering water photographically pure is to distil it, and the purest substitute for distilled water is melted snow.

The accompanying cut illustrates a portable still that will answer all the photographer's requirements, and which will enable him to procure distilled water of absolute purity, which is more than can be said of some of the distilled (?) water supplied commercially. Frequently this is nothing more than condensed steam that has been passed through the cylinders of an engine, thereby rendering it impure for photographic purposes. The arrangement of the apparatus I am about to describe will be found very simple and convenient, and may be briefly described as follows:—The body of the can, A

the method by which it may be fitted up by any one who can use a soldering-iron. First procure from an oilman a half-gallon oil-can, costing about sixpence (it must, of course, be new)—the diameter of this will be about 5 in.; at the same time, obtain a tin saucepan of one gallon capacity, which will cost about one shilling, the diameter of this being 8 inches. Next procure about 8 feet of  $\frac{1}{2}$ -inch block-tin tubing, and then get a tinman to make a tube 36 inches long,  $1\frac{1}{2}$  inches in diameter at one end, and tapering to three-quarters of an inch at the other extremity. Those not used to metal work will find it rather awkward to make a tube of this length in a satisfactory manner; therefore, it will be a saving of time and trouble to get another to make it. The larger end must be made to fit tightly over the spout of the can.

When the above materials have been procured, any ordinarily intelligent operator will experience



no difficulty in fitting the various parts together, which may be done in the following manner:—First cut up the tapering tube to the undermentioned lengths. (For guidance see Fig. 2.) To do this without bending or otherwise damaging it, cut a piece of wood to taper form, and ram this into the tube tight, and then proceed to cut it up as follows by means of a fine saw, from the smaller end to *a*, 12 inches; from *a* to *b*, 2 inches; from *b* to *c*, 13 inches; *c* to *d*,  $1\frac{1}{2}$  inches; then the remaining  $7\frac{1}{2}$  inches should be partially cut through obliquely, in order that it may be bent, and so form the connecting joint. Having bent this portion of the tube to the form of Fig. 3, solder it together by means of a blowpipe or a tinman's bolt, being very particular to ascertain that the two parts are firmly united; after having washed away all traces of the soldering fluid it should be placed aside until required.

Now punch a hole in the top of the can at B (see Fig. 1), and insert the small piece of tube (*c* to *d*) that was cut out of the long one—this must be soldered in its place, and a good sound cork fitted to it.

Next take the tin saucepan, remove the handle, and cut or file off the superfluous solder; then punch a hole  $1\frac{1}{2}$  inches from the top, and insert the two-inch piece of tube (*a* to *b*, Fig. 2), which must be fixed in position by means of solder. Next bend a couple of pieces of stout iron wire and cut two pieces of tin plate to form the handles (see fig. 4). The tin having been bent round the iron, one piece is soldered to each side of the upper part of the saucepan, thus forming a couple of handles. (See Fig. 1.)

Now take the eight feet of block-tin tubing, and bend it round the outside of the can, in order to shape it into a spiral. Next punch a hole half-an-inch from the bottom of the saucepan, through which one end of the condensing worm is passed, the other extremity being inserted in another hole that has been made at about 2 inches from the top, each end of the worm being soldered firmly to the saucepan. It must be so arranged inside as to allow the can being placed in it when the still is not in use.

When finished the worm tub and the taper tube leading from the body of the still should receive a coat of brunswick black.

The above arrangements having been completed, the apparatus can at any time be fitted together, and put in operation in the following manner:—Nearly fill the can or body of the still with clean water, and place it over a moderate fire, or arrange it as shown in Fig. 1 over a Fletcher gas-burner; attach the elbow to the mouth of the can, and then, having placed the worm tub on a convenient support, fit together the two remaining portions of the tube, inserting the

smaller end ( $\frac{3}{8}$ ) in the top projecting portion of the worm, short pieces of vulcanised rubber tubing being fitted over the joints as already indicated.

Now, fill the worm-tub with cold water, which will have the effect of condensing the steam that has passed over from the boiling water; the distilled water, after having traversed the spiral worm, runs off by the opening D, being collected in a bottle, which is removed when full and replaced by an empty one.

The water in the worm-tub must be drawn off at E as it becomes heated, and a fresh supply of cold poured in from the top.

With a moderate amount of heat from the stove, two or three drops of distilled water per second can be obtained.

Before starting the still it will be found advisable to wash it out well with hot water to ensure its being perfectly clean; and, after use, empty the body of the still and the worm-tub, inserting a cork at each end of the worm, and another in the mouth of the can, which is then placed in the worm-tub. The whole apparatus is as portable and convenient as anyone can possibly desire.

## THE PHOTOGRAPHIC INTERVIEWER.



THE American system of "interviewing" all persons who, by their talents or position, may be thought worthy of that honour, does not seem to have made very rapid progress in the older country, although one or two of the English papers occasionally remind us that they know very well how to do it by publishing an account of a successful raid in this field of journalism. It is very attractive to a large section of newspaper readers to be told how a favourite novelist, musician, or painter comports himself in private life, and they read the details of his daily existence with the same avidity that they learn how the last disciple of Bill Sykes ate a hearty breakfast of chops and toast, and listened attentively to the ministrations of the chaplain, before following his victim to eternity. So we may say that there is a demand for this kind of key-hole reporting, and that, as a matter of course, a supply of it is forthcoming.

It has been reserved for the representative of a Parisian paper, *Le Journal Illustré*, to hit upon a method of interviewing which is not only novel, but which opens up a wide field of possibilities to the daring recorder of current events. He explains that, with only the ordinary resources of his craft at his disposal, he may possibly err. His memory may play him false, or he may be misled by the passing expression of his subject's face, so



that the words he writes down, although undoubtedly spoken, may, when printed, give a wrong idea of the speaker's meaning. With these doubts upon his conscience, he looks for some means whereby his well-meant efforts in the cause of truth may be rendered more successful. His interviewing must bear the impress of reality, and he considers that this can best be brought about by calling in to his aid the help of the photographic camera. By this means he has striven, while taking down a speaker's words with his pencil, to possess himself of a picture of that speaker's face, with a record of all the play of feature which we call expression at the more important points of his discourse. M. Chevreul—the great French scientist and authority upon colour, who has just reached his hundredth year—has been chosen for the first subject of this strange experiment. As a result, we have before us a copy of the journal in which this interviewing of the old gentleman is reported, accompanied by photo-process illustrations of the pictures shot off while the interview was going on.

There is something rather ludicrous about the idea of a man visiting another, winding him up, as it were, to talk, and then taking passing shots at him as he speaks. Fancy the occasional snap of the instantaneous shutter whenever a chance expression or action on the part of the speaker made it worth while for the interviewer to use up one of his gelatine plates! Such interruptions would be quite enough to silence a sensitive speaker, however eloquent. But a man who has lived through one hundred years of existence can no doubt stand a good deal of silencing.

The pictures are most certainly interesting, for they depict the expression and gestures of an illustrious man; but, truth to tell, when we attempt to identify each of them with the words printed beneath, and which are supposed to record the speaker's thoughts at the moment of utterance, we have a feeling of failure. The puppets do not seem to work properly. It rather robs the business of reality, too, when we learn that M. Chevreul granted no fewer than three sittings to his photographic interviewer. The entire report could be easily and leisurely spoken in less than half-an-hour, so that we may assume that the taking of the pictures necessitated the extra sittings. This leads us to another point against the procedure. The pictures are not likely to have been instantaneous, but more probably required each three or four seconds exposure! Those of our readers who have tried portrait-taking in ordinary rooms will know very well that even with the most rapid plates, the most careful arrangement of lighting and with the use of reflecting-screens, the operation is a tedious one. How much more tedious it must be when the model sits at his ordinary table, and is

taken without careful preparation, it is unnecessary to point out. Bearing all this in mind, we may imagine that a conversation—not reported in the journal—somewhat to the following effect must have taken place in the house of M. Chevreul.

Photographer: "Kindly stop talking for a moment, sir, and keep up the expression that you had just now."

M. Chevreul (*making a grimace*): "Is that it?"

Photographer: "No; not exactly. I refer to the expression which your features assumed when you were talking about the cold pudding. Perhaps if you will kindly repeat the cold pudding sentence we may secure it."

M. Chevreul: "Is *this* it?"

Photographer: "Not quite right, but nearly what I want."

M. Chevreul: "Then come again to-morrow, my friend, and in the meantime I will repeat the cold-pudding oration to my looking-glass until I get the play of my features quite under control, and can retain the expression long enough for the needs of your camera."

The idea is thoroughly French, and would not have readily occurred to an Englishman, and for this reason: The French are such natural pantomimists that, as they speak, quite half the meaning of their words is conveyed by gesture. Take the well-known shrug of a Frenchman's shoulders, for example—an action which he will indulge in before he has been five minutes in conversation with you. Probably the paucity of the French language has a good deal to do with this, but it is very different to the behaviour of an English speaker. One might interview some Englishmen for an hour or more, and, beyond an occasional smile, he would not change his expression, although the words he uttered might be of the most important character. The camera, therefore, would be quite useless for interviewing in this country, save, it may be, in the case of theatrical ladies and gentlemen, who would look out for those snaps of the instantaneous shutter, and would mould their features accordingly.

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ACCORDING to the *Athenæum*, certain landscape-painters have agreed in future, in exhibiting their works, to omit describing the exact locality where their pictures find their origin, the reason being to prevent "the frequent devastation of beautiful sites by tourists and others (of course, photographers are meant here) unqualified to enjoy what they find in nature." As landscape artists notoriously make abundant use of photography, this is, to say the least of it, ungracious. The reflecting portion of the public will be apt to think that men whose minds are small enough to stoop to this cannot be capable of producing work of any real value.



## OUR FULL-PAGE ILLUSTRATION.

## THE GLEANER.



WE have the pleasure this month to present our readers with a picture which is a very favourable specimen of the Meisenbach process. In our September number we gave an illustration showing how this process could be modified by giving the block a coarser grain, and rendering it more fit for the rapid printing necessary in newspaper work. That adaptation of the process is quite a new one, and may be looked upon as the foremost step in that consummation so devoutly to be wished, the production of a daily *illustrated* journal. Our picture this month exhibits, on the other hand, the finer capabilities of the Meisenbach process. The picture has been reduced from panel size, the original having been taken by Messrs. Lambert, Weston, & Son, of Folkestone.

## THE DERBY CONVENTION.



THE first British Convention of Photographers, which took place at Derby last month, has proved a success, about one hundred disciples of the art having met together for pleasant intercourse and the exchange of ideas. Glasgow is to be the place of meeting for next year, and, although that city is rather far from the metropolis, we may be quite sure that it will be well attended. Mr. J. J. Briginshaw, the honorary secretary, to whose energy the present year's success is mainly due, has been re-elected to the same post. Those who wish to take part in next year's gathering can, in due time, learn all about the arrangements by writing to him at 21, Albert-road, Walthamstow.

Subjoined is a synopsis of papers read at the Convention:—

## SYNOPSIS OF PAPERS.

MR. BOLTON's paper on the Treatment of Negatives after Development and A Mystery Unravelled consists of a well-told story of a certain gentleman who (with whatever plates he worked) always produced veiled negatives. Mr. Bolton paid him a visit one day, and watched his manner of working. Having a short water-supply in his dark-room cistern, he had been in the habit of taking his developed, but unfixed, plates into the daylight in order to give them a thorough rinsing under an outside tap, forgetting that the bromide of silver in the film was still sensitive to light. Moral: "Don't go and do likewise."

MR. JOHN CROSBY sings the praises of Ferrous Oxalate, and deplors that it is not so much

employed in England for development as it is upon the Continent and in America. He rightly says that to secure the best results with it, the oxalate solution must give a decided red tint to litmus paper. He also pointed out that it was advantageous to those with weak chests, or who are liable to bronchial attacks, to have at hand a developer like this which is free from the irritating fumes of ammonia. This paper brought about a discussion, during which it was remarked that ammonia has now been largely superseded by the fixed alkalies, soda and potash, and that even if this were not the case, the inhalation of ammonia is in bronchial affections positively beneficial. Mr. Taylor said that Ferrous Oxalate was being rapidly supplanted in America by pyro, and Mr. Edwards said that the same change of developers was taking place all over the Continent. Altogether, Mr. Crosby had to face a good many contradictions to his assertions.

MR. RICHARD KEENE, whose platinotype pictures have made his name familiar, and who resides in Derby, took care in his paper to point out to his fellows the points of beauty and places of interest round about that city. His information was acted upon in the most practical manner, and many were the pleasant trips indulged in by the visitors.

MR. W. K. BURTON discoursed in a very able manner upon his favourite subjects—Emulsion-making and Plate-coating, during which he recorded many valuable observations which he had made in his own practice. He stated that the quantity of water used will have more influence on the time or temperature, or both, required to gain sensitiveness, than either the excess of bromide or the quantity of gelatine employed, provided always that there be enough of the latter to hold the bromide of silver in suspension. The quantity of water which he recommends is twelve ounces to each 400 grains of silver used. He sounds a note of warning against the addition of methylated spirit to an emulsion, without having first tested the quality of that very uncertain compound. One more important matter he dwells upon in the following words:—"This matter of keeping the emulsion at such a state of concentration that it will set quickly, only just giving time to let the film spread itself evenly on the glass, with the temperature of the emulsion at from 90° to 110°, is one of the very greatest importance, if the highest sensitiveness is required in the plates."

MR. A. L. HENDERSON is another ardent experimenter, who has done much to increase our





THE GLEANER.

[See page 124.]







knowledge of emulsion-making, and its behaviour under all sorts of conditions. He is one who seems to take a positive pleasure in imparting all he has learned by careful experiment to others. At the meetings of the London and Provincial Association he is always to the fore with something new to show or explain to the members. His paper on "Gelatine Emulsions," read to the Convention, is a record of carefully-conducted experiments and observations which will be very helpful to plate makers.

MR. J. TRAILL'S paper, "On Focussing Sailing Ships and other Moving Objects," is one to which many will look with great interest. He gives a short history of what has been done in the past in the way of furnishing cameras with *finders*, and explains the method which he himself adopts, as follows:—

I now submit my own camera and the system of focussing I have adopted. The camera, as you perceive, is an American one, to which I have added a lens of sixteen inches focus. Being fond of carrying with me a pocket telescope, I selected one the object-glass of which is of precisely the same focus as the camera lens; and when I wish to focus the camera on a moving object I take the little telescope (a cheap French one) from my pocket, draw out the slides, the second one of which moves very loosely, and by means of a pin projecting from the top of the lens-board or front of the camera, I instantly attach the object-glass end of the telescope, doing the same with one of the sliding-tubes to the ground-glass end of the camera. Careful adjustment is necessary when determining the position for the pin, and as both telescope and camera are now controlled by the rack and pinion of the latter, it is only requisite that you look at the object to be photographed through the telescope, and render the image sharp by the rack and pinion, to ensure the image formed by the camera lens being more perfectly focussed on the sensitive plate than it could have been by focussing on the ground-glass in the usual way. When done with, the telescope is lifted from its position on the camera, and returned to the pocket.

MR. ROBINSON discoursed on "Success," and surely no one in the photographic world knows more about that subject than he does. Mr. William Adcock—whose studies of heads have been familiar to exhibition-goers for some time—took up that topic for his paper, which is full of good, healthy advice. Here is a paragraph from it:—

Tell men who have heads what pictures they would make, and show them what you can do. Have two styles of heads—a masher's and a man's. Let the former be beautiful as Rachel's enamel once was; let no egg-shell beat the skin in smoothness; let no wrinkle or marking be obliterated; but when you get a man with a character in his head, make a man of him. Make two portraits, if you like, but let one be the big, direct, untouched one. If taken—but unbought—show it as a specimen. Let artists see it. Grist will come to the mill. In saying this, I am asking you to employ your best powers, your artistic taste; study old masters, and imitate them; aim at grand effects of light and shadow.

## HOW TO AVOID SNARES AND PITFALLS IN PHOTOGRAPHY.—V.

BY DR. G. LINDSAY JOHNSON.

### DEVELOPING THE PLATE.



UNLESS you intend absenting yourself for many weeks from home you will do well to leave all bottles and developing kit behind. It is true, one sees very tempting and wonderfully-arranged multum-in-parvo travelling-bags filled "with every requisite for the amateur photographer," but I cannot in the least recommend the samples that I have met with. Apart from other objections, the presence in one bag of this kind of a neatly-stoppered two-ounce bottle of "hypo" alongside of a three-ounce bottle of sodium acetate, irresistibly led me to the conclusion that practical utility was a requisite which the outfitter deemed far beneath his notice. It is very questionable whether anything is to be gained by developing outside one's properly-appointed work-room at home. If you cannot make certain of timing your exposures within printing limits, I am sure that the experience gained by developing a few plates will not help you much. Certainly it will not compensate for the extra weight of your luggage, when every pound-weight is a matter of serious consideration. Besides, until the negative has dried quite hard, it stands a great risk of being injured when packed up, and must needs have a box to itself lest it should infect the other plates. If you *must* develop, you can dispense with everything except a couple of trays, three measures, a small tin box of hyposulphite, and your two (or three) bottles of developer. The measures should go one inside the other. (I find a four-ounce, a two-ounce, and a funnel-shaped minim measure to be the most useful sizes for developing whole-plate or half-plate negatives.) I may here mention that Hicks' patent measures are by far the best for being annealed. They will not easily break when knocked over, and being made of opal glass (except along two narrow strips) they can be discerned and read in a feeble light. The two strips of clear glass are left to see the level of the liquid better. The bottles should each be wrapped in a fold of corrugated paper (to be purchased at almost any photographic store), and slipped into a sock with crumpled-up paper at each end of the bottle. They will then stand any amount of knocking about. You can get alum, citric acid, or "hyposulphite" at any village in Europe big enough to boast of a drug store. You will find it unnecessary to carry a solution of hypo about with you, and it will answer



every purpose if you throw a small handful of hypo powder into a breakfast-cup, and fill up with warm water just before beginning operations. You need not measure the hypo—merely add roughly from four to eight times as much water in bulk as there is hypo powder. A few ounces more or less water makes no difference whatever to the result. It is well to powder the hypo-crystals, because they will then occupy less bulk and dissolve much more readily. An eight-ounce tin of hypo well-powdered ought to fix 20 whole-plate negatives.

**DARK ROOM.**—The most rapid way to turn your bedchamber into an extempore dark room is to pin the blanket or table-cloth against the ledge above the window with large drawing-pins (a box of which should always be carried in travelling), and then stop the side leakage with the sofa cushions and pillows propped up with the towel-horse or a chair to steady them. The chinks round the door can then be stopped with towels pinned against the top cornice, so as to hang down in front of the cracks, and a handkerchief hung over the keyhole. In Norway the wooden houses are so “porous” that, in addition to the above, the cautious photographer will often find it necessary to change his plates under the table, or even resort to a squeeze in the cupboard. In a brick-built house you may ignore every source of light except that coming from the window, provide none of the light is direct. You will be surprised to find how difficult it is to fog a plate in the dark-room. I doubt if one per cent. of all fogged negatives could be traced to outside light entering the dark-room.

**LAMPS.**—The best portable lamps I know of are those after the type of McClellan’s, of Manchester, or Rouch’s, of the Strand. The former I always use myself, because I prefer clear red and orange glass to work by; but for those who like diffused light, those made after Rouch’s or Redding’s pattern would suit their purpose better. The latter, however, is liable to catch fire in careless hands, as I found twice to my cost. For home work you can’t have too big a lamp, which should have a face at least the size of the plate you are developing. Of the methods of illumination, I should discard daylight, because the light is never constant, and thus one has no standard by which to judge of the density of the image.

Of artificial light, gas presents one great advantage. It gives so little trouble and is easily controlled, so that you can begin developing with it turned low and raise it to the full when the image is nearly formed, thus avoiding any chance of fog. If gas be used, it is essential that either the dark room should be a large one or else that the jet should be practically outside the room, so

that the light only, and none of the heat and products of combustion can reach the plate. The great heat generated in a small chamber, combined with the poisonous products of imperfect combustion, such as carbonic oxide, acetylene, and the like are injurious to both the operator and the negative. Headache, languor, restlessness in bed, and inability to sleep soundly at night, are the leading symptoms which usually result from developing plates with gas-light in a stuffy room. I met with one case in which the insomnia lasted for several weeks after the cause had been removed. Incomplete combustion of coal-gas, combined with heat, produce several curious results on the film. The most disastrous, perhaps, are red and green fog. I mention these two together, as the former is only an aggravated condition of the latter. All the leading photographic writers seem to have overlooked the true cause of this nuisance. Captain Abney, in his “Instructions,” dismisses red fog in four lines, and, in the case of green fog, merely hints at the reduction of metallic silver by decomposed gelatine as a possible cause; while Mr. Burton, in his valuable little book, lays the whole blame on the plate manufacturer.\* I have myself produced green and red fog so many times, and with such certainty, by developing plates under the above conditions (when I have taken the precaution to ascertain that the plates from the same batch were free from defect) that I am irresistibly led to the conclusion that gas imperfectly burnt is at least a common cause, if not the only one. Moreover, the hotter and more poisonous the air the nearer does the green approach the red variety. Green fog is always dichroic, being bluish-green by reflected light, and a pretty rose-pink by transmitted light. If the ventilation of the room be still more interfered with, the green will slowly change to brown, and the pink to a deep-red colour after removal from the fixing-bath.

There is another curious phenomenon, which is much more common, and which may be witnessed when the ventilation of the gas is only slightly interfered with, viz., a thin, quite superficial deposit of pure, reduced silver, which forms over portions of the plate, generally near the edges. This is seen best after the plate is removed from the hypo. It closely resembles the iridescent scum on the surface of tar or lead. It spoils the appearance of the negative, but I have never found it interfere with its printing qualities. If desirable, it may readily be removed by a solution of cyanide of potassium. Green fog may be in some measure cured by soaking in any reducing solution, but Captain Abney recommends the

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\* “Green fog is always due to error in the manufacture of the plates,” Burton’s “Modern Photography,” p. 76.



addition of potassium bromide to the solution. His formula stands thus :—

Ferric chloride .....	50 grains.
Potassium bromide .....	30 „
Water .....	4 oz.

In this solution the image is converted into silver bromide, which bleaches the green fog.

*(To be continued.)*

## PHOTOGRAPHS OF OLD LONDON.—II.

BY THE EDITOR.



WITHIN a stone's throw of that busy place, Smithfield Market — where tons upon tons of all kinds of produce are delivered daily to feed modern London — there yet exist many relics of ancient times, which the Society for photographing those relics have been careful not to omit from their beautiful collection. Here, where many a martyr suffered at the stake for conscience' sake, may be found three interesting buildings which were associated with that monastic system which once flourished with such luxuriance in our country, namely, St. John's Gate, Clerkenwell, the famous Charterhouse, and the noble priory church of St. Bartholomew.

St. John's-gate, a very fine specimen of perpendicular architecture, is the only remnant of the Priory of St. John, which was founded in 1100 by Henry I., and which was subsequently burnt down by the destroying band of rebels led by Wat Tyler. It must have been a place of great extent, for it is recorded that the conflagration lasted for seven days. But the priory was rebuilt and again tenanted, until its suppression by that enlightened monarch, Henry VIII. The gateway, which still forms such a notable feature of a busy London street, dates from 1504, and the old rooms above it contain some interesting memorials of its later history. It was here that Cave, the printer, first started the "Gentleman's Magazine," and it is for this reason that that periodical yet bears upon its cover a representation of the old archway. No less a person than Dr. Johnson worked here for Cave at so much per sheet, and the then unknown lexicographer is said for some time to have been dependent upon this work for his daily bread.

Another building, or rather series of buildings which are identified with the rise and fall of monasticism in England, is the Charterhouse, of which the Society did well to secure several fine pictures. For it was a few months ago a moot point whether or not this interesting relic should be partly demolished—for modern profit and convenience. We are glad that this projected act of vandalism was frustrated. It is a curious fact that the average Londoner, surrounded as he is by

these interesting relics of a bygone age, hardly knows of their existence ; and even if he be in the daily habit of passing near them, he never attempts to pay them a visit. It is, perhaps, hardly fair to point to the Londoner's want of interest in his surroundings, for it is a very common trait in the characters of others. An instance of the kind came under the notice of the writer a few days ago. He was talking to a farmer's wife who for fourteen years had lived within three miles of the coast at a place in Suffolk. She said, in the course of conversation, that she had always heard that the beach was a very fine one, but she had never seen it ! It is certain that a very small percentage of Londoners have ever visited the Charterhouse, or know that its name is a corruption of Chartreuse, the famous French monastery, from which came the delicate liqueur, and which, now that the monks have been turned out by their compatriots, is manufactured elsewhere.

But, apart from antiquarian considerations, the Charterhouse should be an interesting place to English folk, if only because of the fact that Thackeray was educated within its walls. How lovingly he speaks of the old place, which he christens "Greyfriars." Here is a passage from "The Newcomes," in which he alludes to Founder's-day—Nov. 12—a date which is still honoured by Carthusians :—"The boys are already in their seats, with smug, fresh faces, and shining, white collars ; the old, black-gowned pensioners are on their benches ; the chapel is lighted, and Founder's tomb, with its grotesque carvings and monster heraldries, darkles and shines with the most wonderful shadows and lights. There he lies, Founder Noster, in his ruff and gown, awaiting the great examination-day."

In the middle of the fourteenth century London was visited by the awful plague of sickness known as the Black Death. The usual burial-grounds being insufficient to meet the sudden demand upon them, it became necessary to devote certain fields to the purpose. The space selected was here close to Smithfield, and in one year 50,000 victims to the epidemic were buried in it. Some few years afterwards the Charterhouse was erected on the site of this burial-ground. At the time of its suppression, its prior was sent to the Tower, and afterwards executed. The king seized upon its revenues, and thenceforward the place was devoted to secular purposes. After passing through the hands of different owners, it was bought, at the beginning of the seventeenth century, by Thomas Sutton, a wealthy merchant, in order that he might turn it to the cause of charity. It was now converted into a hospital for poor men, and a school for the instruction of those whose parents stood in need of the means to educate them. In 1872 the school was re-



moved to Godalming, and the modern erection there forms a strange contrast to the old buildings to which it owes its foundation.

The church of St. Bartholomew the Great (see Fig. 1.) represents part only of the priory church built by Rahere in the twelfth century. The same pious man founded the hospital close by. This noble parish church is a fine example of Norman work, but it is only the choir of the original building. Encroachments of a secular nature had, up till a short time ago, been allowed to greatly spoil the general effect of this venerable pile. Thus a fringe factory occupied the Lady Chapel, and part of it overhung the altar; the north transept was turned into a blacksmith's forge, and a boy's school occupied the triforium. In addition to these lamentable disfigurements, the entire building was in a dangerous state, and immediate repairs became necessary. It was resolved that, if possible, the repairs should go hand-in-hand with the work of restoration. In a rich city like London it was not difficult to raise sufficient money to purchase the fringe factory and the forge, and to re-erect the school in a more suitable situation, besides executing the necessary restorations and repairs. The work is now nearly complete, and in a few weeks Londoners will have the satisfaction of seeing one of their most interesting churches restored to a little of its former grandeur. In connection with the restoration work, the following brief history of the church has been published.

It was built for the Black Canons of St. Augustine by Prior Rahere, during the reign of Henry I., at the beginning

of the twelfth century, no building having existed there before his time. A Saxon church is hinted at as having once occupied the same site, but there is no great authority for the statement. The exact date is variously given, but there can be no doubt that the greater part of the existing remains are of Rahere's time, and were finished in 1123, being about coeval with the naves of Durham, Peterborough, and Norwich Cathedrals. The present church was the choir only of Rahere's, the nave having been built at the beginning of the thirteenth century, in a later style of architecture. This was unhappily destroyed in Henry VIII.'s time, and few remains of it exist; there is, however, the present very beautiful entrance from Smithfield. Large repairs seem to have been done by Prior Bolton, 1506-1532.

It is stated that Queen Mary restored the building to the convent of Black Friars, who began to rebuild the nave, but were dispossessed by Queen Elizabeth; no trace of their work is, however, apparent. Great alterations and repairs seem to have been effected from 1622 to 1628, at which last date the "steeple," part of stone and part of timber, "was pulled down to foundation and rebuilt of brick." The original church was 280 ft. long and 60 ft. wide, with apse, transepts, choir, and nave; having also cloisters, prior's house, refectory, chapter house, and other usual adjuncts to a conventual church, forming, when complete, a very splendid monument of the piety and architectural skill of our forefathers.

There has also been published in connection with this important restoration "The book of the foundation of St. Bartholomew's Church in London,

sometime belonging to the Priory of the same in West Smithfield," edited from the original manuscript (preserved in the British Museum) by Dr. Norman Moore, one of the physicians attached to the neighbouring hospital. This book is practically a history of the founder, Rahere, with some account of the wonderful miracles which were vouchsafed to those who in old times took their troubles to the shrine of St. Bartholomew. We are told how Rahere, who was "boryn of lowe lynage," when a



Fig. 1.—The Church of St. Bartholomew the Great.



young man, acted the part of a jester, visiting the houses of the great and the palaces of princes, and amusing all with his jokes and flatterings, "by the whiche he myght drawe to hym the hertys (hearts) of many oone." But he was eventually "converted fro the erreure of his way," and saw a wonderful vision, in which St. Bartholomew appeared to him, and told him that he had "chosyn a place yn the subbarbis of London at Smythfeld wher yn myn name thou shalte founde a chirche." Rahere followed the command of the Apostle, and built the church and the hospital adjoining; but they can certainly be no longer described as being situated in the suburbs of London.

In the notes which accompany Mr. Dixon's excellent photograph of the old church, its claims to distinction are well summed up as follows:—"Except the Tower of London and its surroundings, there is no part of the City, old or new, around which are clustered so many events interesting in history as that of the Priory of St. Bartholomew the Great and its vicinity. There are narrow, tortuous streets, and still narrower courts, about Cloth Fair (see page 88), where are hidden away scores of old houses whose projecting eaves and overhanging floors must have seen the days of the Plantagenets and the earlier Tudors. To the real lover of the past history of our great City; to the earnest inquirer into the rise and progress of our present civilisation; to the pious student of the earlier times of our English Church, and her struggles after freedom, there is no part of modern London that will better reward a careful survey than that now under our consideration. In the old times, when Chaucer was young, and his Canterbury Pilgrims were men and women of the

period, processions of cowled monks and chanting boys, with censers and crucifix, wended their way from the old Priory to that of the Black Friars by the Thames. Not unfrequently Edward the Third and his favourite, Alice Pierce, had spent the morning witnessing the tourney of mailed knights in Smithfield, and had then passed into the old Priory, to partake of the entertainment provided for them in the great refectory beyond the south cloister.

Charles Dickens, in the guise of an "Uncommercial Traveller," was very fond of visiting odd nooks in the City of London, and the handsome and—in his day often congregationless—churches are not forgotten. How quaintly he writes about attending service at one of them, and finding to his astonishment that he had ever since he entered the building been taking a strong kind of invisible snuff up his nose. "I wink, sneeze, and cough; the clerk sneezes and coughs (and probably winks); all our little party wink, sneeze, and cough. The snuff seems to be made up of the decay of matting, wood, cloth, stone, iron, earth, and something else. Is the something else the decay of dead citizens in the

vaults below? As sure as death it is. Not only in the cold, damp, February day do we cough and sneeze dead citizens all through the service, but dead citizens have got into the very bellows of the organ, and half-choked the same. We stamp our feet to warm them, and dead citizens arise in heavy clouds, dead citizens stick upon the walls, and lie pulverised on the sounding-board over the clergyman's head, and when a gust of air comes, tumble down upon him."

St. Bartholomew's churchyard is one of those



Fig. 2.—The Churchyard of St. Lawrence Pountney.



few green spots in the crowded City upon which the eye delights to dwell ; and although the grave-stones are in a very ruinous condition, they are crowned with lofty plane-trees. This tree is one of the few green things that will really flourish luxuriantly even in London smoke. What a brave show they make in many of our London squares—Fitzroy and Bedford-squares, for example. Their foliage keeps crisp and green for a long time ; and another great advantage is that the stems do not become encrusted with London black, for the bark peels off periodically.

The churchyard of St. Lawrence Pountney, not far from Cannon-street Station (see Fig. 2), is characteristic of the manner in which the dead are closely surrounded by the living in modern London. The society for preserving open spaces in the Metropolis are doing good service in turning many of these no man's lands into peaceful gardens, where busy workers can snatch a few minutes' quiet from the endless bustle of the London streets. The church of St. Lawrence Pountney (named after a draper of the name of Pountney, who was four times Lord Mayor in the fourteenth century) was burnt down in the Great Fire, and did not rise again from its ashes. But traces of its walls are still discernible in the fronts of some of the houses which border the churchyard. As these old churchyards are mostly in a neglected condition, it is to be hoped that in a few years they will all be transformed into gardens. No one would wish them to be put to any other purpose. The dead who sleep there are separated from the living by many generations, so that there can exist no personal feeling against such a proceeding. But it is as well that the appearance of these old graveyards has been so well preserved by photography.

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## BALLOON PHOTOGRAPHS.



IN the *Century* magazine for the past month there are a couple of capital articles which should prove interesting to those photographers who may happen to be contemplating a skyward journey for the purpose of securing new effects. One of these articles is called "Amateur Ballooning," and the other records the "Ballooning experiences of a timid photographer." Both articles are fully illustrated, but the pictures which adorn the second article are of the greater interest to us individually from the fact that they are process reproductions from photographs taken from the car of a balloon. One of these is of especial interest, for it was taken through a hole cut in the bottom of the car for the purpose of photographing.

Balloon pictures are seldom satisfactory from an

artistic point of view, partly because they show nature from a very unusual standpoint, and partly because large open views are generally unsuitable for photographic representation. In nature such extensive views depend for their glory in the distance, contrasting with the richer tints near at hand. This colour is, of course, neglected by the camera, while certain hues are much altered by being translated into something too dark or too light by the agency of the chemicals employed. But these photographs are among the most successful of the kind which we have met with.

The risks of ballooning seem to be hardly so great as they are generally imagined to be. The veteran Green, who made about seven hundred ascents, died peaceably in his bed. And there must be many aeronauts living who have made a similar or greater number of ascents with impunity. In the last edition of "Pepper's Playbook of Science" we find a casualty table, which takes in the years 1675 to 1874. In this table (which, it will be noticed, commences a hundred years before Montgolfier invented the first balloon, and therefore included those persons who attempted to fly with artificial wings, &c.) there are enumerated forty-seven individuals. Of these seventeen only were killed, but nearly all met with accidents which *might* have proved fatal. This is an encouraging document for intending visitors to the clouds, for it presents a very fair record, when we consider how common balloon ascents have been during the last thirty years.

The "timid" photographer, who has contributed such an interesting article to the *Century*, is Mr. John G. Doughty. His name and his doughty deed belie the modest adjective by which he describes himself. But the article is something more than interesting, for it gives a good deal of practical information, which is a valuable contribution to photographic literature. The following extract from the article will show that this is the case :—

"As some may be interested in the details of our photographic equipment, I will give a description of it. We used five-by-eight-inch plates, which size seems best suited to our purpose, as it allows a considerable extent of country to be included in the view, while the apparatus need not be unduly bulky or heavy. The camera was quite light, as all the apparatus used in a balloon must be, but not so fragile as to sacrifice rigidity in keeping the distance at which the plate is set from the lens, as this is of even more importance than lightness. The plates used, which must be of the utmost sensitiveness, were contained in the necessary number of dry-plate holders, which in turn were carried in two boxes made to pack them securely. In any future ascensions these boxes will be provided with locks, as we have learned to our cost that nothing will so excite the curiosity of the average hotel porter as a photographic apparatus left in his care. The object of packing our plate-holders in boxes was twofold : first, the plates were better protected from light and more convenient to carry, as in ordinary work ; second, as we knew that the landing is not always as orderly as could be wished, we hoped, by keeping



hold of our holders at such a time, to save our exposed plates, at least, from injury.

"A 'finder' was attached to one side of the camera, to enable the operator to see just what would be included in the view at the moment of exposure. This instrument is like a smaller camera, except that no provision is made for focussing, and the ground glass is permanently fixed at the proper distance from the lens. The ground glass of the finder was of the same proportion as the larger plates on which the views were secured, and had lines drawn from either side, crossing at right angles in the centre. The finder is attached to the camera in such a position that any object appearing on its screen will be sure to occupy the same position on the dry plate.

"The lens used was of the rectilinear kind, especially made for groups and instantaneous work. The instantaneous shutter, used to cut off the light and give the plates their very brief exposure, was fastened in front of the lens, and was of the kind called an eclipse, but was considerably changed by me before our second attempt. The springs which caused the sudden motion, and admitted light to the camera for an instant, exerted a force of eleven pounds when the shutter was set for action, and were, of course, adjusted to give a quick rather than a forcible motion.

"My manner of operating while in the balloon, when we had determined on 'taking' any place we might be approaching, was, after deciding on the correct focus, first to 'set' the shutter, then insert the plate-holder and draw the slide; the camera was then taken in the left hand, with the rubber bulb of the 'pneumatic release' of the shutter in the right. Then we must wait until the revolution of the balloon had brought the desired place opposite the camera, when it was pointed so that the view was in correct position on the screen of the finder, the rubber bulb was pressed, and the exposure was made; the slide was then inserted in the plate-holder, the holder removed and boxed, and we were ready for another subject. At the same time Mr. Moore recorded the exposure for me, taking down the number of the plate-holder, the subject, and the altitude as shown by the barometer. The record was a very necessary guide in developing the plates, and it was kept by Mr. Moore, because in our flight objects of interest were presented in rapid succession, and much time was saved by this division of labour; as it was, the camera was hardly out of my hands during the whole time of our ascension."

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## THE PERMANENCE OF WATER-COLOURS.



LONG and somewhat wearisome correspondence has now for some months been going on in the columns of the *Times* with the view of settling the important question whether the water-colours used

by artists are or are not permanent. That this is a really important question, must be admitted by all who remember that the English school of water-painting is a distinctive feature in the world of art. Its results are so very beautiful, and are so deservedly valued, that it would be a sad thing indeed if the materials of which these pictures are built up do not prove at least as permanent as the paper upon which they rest. The arguments for and against water-colour drawings which have been advanced in the correspondence referred to have

been by no means conclusive, and have partaken rather of the I-say-it-is-and-I-say-it-isn't form of controversy familiar to schoolboys. But this difference of opinion has had the effect of causing the appointment of a committee of artists to consider the whole question at issue, and this committee will be assisted in their deliberations by the valuable scientific advice of Captain Abney.

It is curious to observe that throughout this controversy the combatants seem to have relied solely upon theory. One would state that he had in his possession certain pictures painted by some well-known artist a few decades ago, and that some of the tints were mere ghosts of what they must have been at the time that they were fresh. Then the other side would take up his pen and declare that he had some drawings of the same period which were literally as "fresh as paint." But at last we have something really practical from a contributor, Mr. James Simpson, who must have laughed in his sleeve all these weeks to think that he had in his possession certain pieces of card which would at once determine the matter. These pieces of card he had—fifteen years ago—washed with the several colours, thirty-one in number, which have been used by water-colour painters. These were then cut in halves, and while one-half of each coloured card was exposed to fifteen years of daylight, the other halves were kept in absolute darkness. He has now compared the exposed pieces with those which have been kept from the influence of light, and has proved, beyond doubt, that while several pigments have stood that severe test, others have almost entirely faded.

It is well known that light is not the only enemy to the permanence of colours, although its effect upon some is very swift and sure, as the careless housewife, who lets the sun shine upon her carpets and hangings, very well knows. We have before us an old miniature—a portrait of a country squire, who rejoiced in an open pleated shirt-front, and a collar that no one in these days would dare to wear unless he were Prime Minister. From the general appearance of the gentleman, we should imagine that he was a bit of a dandy, and would certainly wear linen of irreproachable whiteness. But in the miniature his wonderful collar and shirt-front are perfectly black. They were, no doubt, white when the artist painted them; but he had used white lead for the purpose, and the sulphuretted hydrogen constantly in our atmosphere as a product of gas-consumption has caused the change. It may be asked why, if white lead be so easily changed in this way, can house-painters use it in making up nearly all their tints, and yet those tints do not change? The answer to this question is simple. The house-decorator uses oil as a vehicle for his colour, and each little



particle of carbonate of lead is therefore protected by a bead of oil from actual contact with the atmosphere. This is true of many other colours. So that it may be said that many which are fugitive as water-colours are permanent when used as oil-colours.

Photographers, as a rule, are more interested in the question of the permanence of those tints which are not protected in the way just described, and we purpose in this article to give a brief account of those colours more commonly in use, to describe their origin, and the basis upon which their claim to permanence severally rests.

We have already seen that white lead, commonly called flake white, must never be used at all, unless we are content to see it gradually grow black. But a white pigment is, perhaps, of greater service to the photographer than any other colour, if white can be called a colour; and, luckily, he has at command a white of great purity, and one which is quite above suspicion, so far as permanency is concerned, in Chinese white. If this be bought of a well-known maker, the user can employ it with every confidence; but he will find that some makers prepare it of much finer quality than others. But this caution refers only to its mechanical, not to its chemical, preparation. A well-ground Chinese white can be made to describe, with a sable brush, the finest lines; but a bad sample will flow sluggishly from the brush, and show the grittiness due to insufficient grinding.

Chinese white is made from oxide of zinc, and it does not discolour, because the sulphide of zinc which is formed with it by treatment with sulphuretted hydrogen is also white, the sulphide of lead which is formed under the same circumstances when flake white is used being black. In cases of doubt, the permanent zinc compound can be distinguished from the non-permanent white-lead by the following simple test. Place the pigment in a test-tube, and add to it a little dilute nitric acid. It will effervesce if it be white-lead; and, on subsequent treatment with sulphuretted hydrogen, will throw down a black precipitate. If it be zinc, no such action will be observable. Other white pigments have been introduced of late years, but it is hardly worth while to allude to them here. Chinese white is undoubtedly the best for the photographer's purpose.

Next in order let us take the yellow pigments. At the head of these stands gamboge, which has always been considered a pretty reliable colour to employ, as it is certainly a pleasant one to use; for it flows readily from the brush, and a little of it covers a large surface. It did not, however, stand Mr. Simpson's severe test of fifteen years' exposure to sunlight; for he reports that it faded considerably. Still, we must remember that photographs and pictures generally have no such ordeal

to go through, and, therefore, gamboge may yet be looked upon as a trustworthy agent. Gamboge is a resinous gum which is expressed from the leaves and branches of certain tropical plants. It has a certain medicinal value, and is the chief ingredient in some much-advertised pills, which, like most patent medicines, have the property of curing every ill to which human flesh is heir.

"Cadmium" yellow is made from the sulphide of that metal, and although of a permanent nature if pure, is liable to be the subject of adulteration, for the simple reason that the metal is sufficiently rare to make its sophistication profitable. It is a beautiful colour, and much valued by artists for sunset skies, to which it gives a remarkably rich tone. Here, again, the sulphide is prepared by treating a salt of the metal—the chloride or the nitrate—to a stream of sulphuretted hydrogen gas, when the yellow sulphide is thrown down as a precipitate. It is hardly requisite to state—seeing what has gone before—that if a sample of cadmium yellow be adulterated by mixture with one of the yellows derived from lead, the fraud would be detected by sulphuretted hydrogen. The lead compound, under such a test, would turn black.

Chrome yellow is one of those lead compounds which might be used for adulterating the pigment just adverted to, for it can be prepared at a very cheap rate. Those who are of an experimental turn of mind can make any amount of it very readily. Prepare two solutions, one of nitrate of lead and the other of bichromate of potash. Mix them together, and a heavy, brilliant, yellow precipitate of chromate of lead is immediately thrown down. This, treated with several changes of water and dried into a cake, forms the chrome yellow of the colour-shops. By certain modifications of the process, orange chrome is produced. The reader will be prepared for the statement that this lead compound is not a stable one. For the same reason that white lead is liable to darken, chrome yellow is wont to change its tint. For the reason already given, it is safe to use it as an oil-colour, but it is quite unreliable for water-colour purposes, unless it can be thoroughly protected from the atmosphere. All things considered, let the artist shun the use of the chrome yellows.

The colour-box of commerce is very weak indeed in greens. Sap green is hardly worth mentioning, for it is made up of vegetable juices and the colouring matter from certain berries, and is about one of the most unstable things which an artist can use. We have heard that "tobacco juice" was at one time vaunted as a desirable (brown) pigment; and sap green would prove in practice about as satisfactory as the fragrant weed. Its advantages would end in smoke. Scheele's green, emerald green, and a host of fancifully-named greens are compounds of arsenic. Mix in



solution some white arsenic and some acetate of copper together, and there will be a copious green precipitate. This is emerald green, which, apart from its poisonous character, is difficult to work with, and gives a tint so crude as to be unlike anything seen in nature. "The livery of the trees" is far better imitated by mixing some transparent yellow with one of the permanent blues, a mixture which in different proportions, and by admixture with reds and browns, will give a wide-enough range of tints to satisfy the most exacting artist. Emerald green, too, suffers chemically by admixture with other colours. With cadmium yellow, for instance, it quickly loses its virtue, if it ever had any. Of late years, a good deal of discussion has arisen from the practice of employing emerald green in wall-papers. It is said that such papers gradually give off the poisonous pigment in fine powder, which is inhaled by the dwellers of the room papered by it, much to the detriment of the inhaler. "Sanitary" wall-papers are now advertised which dispense with the poison, and which, at the same time, meet the requirements of the æsthetic craving for "greenery-gallery, Grosvenor Gallery" combinations. Emerald green, with all its disadvantages, may be considered permanent, if employed alone and unmixed.

(To be continued.)

THE following methods of testing water for various impurities, lately published in the *Scientific American*, will be found useful to our readers:—

**TEST FOR HARD OR SOFT WATER.**—Dissolve a small quantity of good soap in alcohol. Let a few drops fall into a glass of water. If it turns milky, it is hard; if not, it is soft.

**TEST FOR EARTHY MATTERS OR ALKALI.**—Take litmus paper dipped in vinegar, and if, on immersion, the paper returns to its true shade, the water does not contain earthy matter or alkali. If a few drops of syrup be added to a water containing an earthy matter, it will turn green.

**TEST FOR CARBONIC ACID.**—Take equal parts of water and clear lime water. If combined or free carbonic acid is present, a precipitate is seen, to which, if a few drops of muriatic acid be added, an effervescence commences.

**TEST FOR MAGNESIA.**—Boil the water to a twentieth part of its weight, and then drop a few grains of neutral carbonate of ammonia into a glass of it, and a few drops of phosphate of soda. If magnesia be present, it will fall to the bottom.

**TEST FOR IRON.**—Boil a little nut-gall, and add to the water. If it turns grey or slate, black iron is present. 2. Dissolve a little prussiate of potash, and if iron is present it will turn blue.

**TEST FOR LIME.**—Into a glass of the water put two drops of oxalic acid, and blow upon it; if it gets milky, lime is present.

**TEST FOR ACID.**—Take a piece of litmus paper. If it turns red, there must be acid. If it precipitates on adding lime water, it is carbonic acid. If a blue sugar-paper is turned red, it is a mineral acid.

## Reviews.

*Practical Guide to Photography.* (Marion & Co., 22 & 23, Soho-square, London.)



WE have just received the new and enlarged edition of this useful, well-written, and well-printed manual. In 230 pages, the writer—who is evidently no novice in the art which he describes—has contrived to include a great deal of matter. The book justifies its name in being really practical in character. Here is an extract which will show the useful nature of the information to be found in the book:—"Two or three years ago Captain Abney recommended hydrokinone as a developer instead of pyrogallic acid. At that time the substance was so dear as to prohibit its being used except experimentally. Now it is comparatively cheap, and the developer is becoming a popular one. It may be used without a restrainer, and, when first it was described, it was claimed for it that it would enable plates to be worked with from one-half to one-third the exposure required when the ordinary developer is used. It would appear that this is a mistake; nevertheless, some prefer the developer to any other. It is at least worthy of a trial by those who are of an experimental turn.

"Solutions may be mixed as follows:—

### No. 1.

Hydrokinone .....	$\frac{1}{2}$ ounce
Nitric acid .....	20 drops
Water, up to .....	6 ounces.

### No. 2.

Strongest liquor ammonia (.880) ..	80 minims
Water .....	1 pint.

### No. 3.

No. 1 .....	1 ounce
Water .....	19 ounces.

### No. 4.

Bromide of ammonium .....	1 ounce
Water, up to .....	10 ounces.

"Nos. 2 and 3 are used as with the ordinary developer when exposure is normal. No. 4 is only to be used in cases of over-exposure, when a few drops are added to the developer."

**INTERNATIONAL COMPETITION OF AUTOMATIC ENGRAVING.**—This competition, which was projected last year by Mr. J. S. Hodson, the secretary of the Printers' Corporation, is now completed, and the jurors will be called upon to decide upon the relative merits of the various exhibits. These include productions by London houses, and also some from establishments in Paris and Vienna. The list of jurors includes the names of Sir Frederick Leighton, P.R.A., Captain Abney, R.E., F.R.S., Mr. Edwin Bale, R.I., Mr. J. Comyns Carr, Mr. Edward Dalziel, Professor Sidney Colvin, Mr. Hubert Herkomer, A.R.A., Mr. J. S. Hodson, F.R.S.L., Mr. Marcus B. Huish, and Mr. W. L. Thomas, R.I. The whole of the specimens will be shown at an evening concert to be given in aid of the Printers' Corporation at the Holborn Town-hall on Tuesday, the 12th of October, when the various awards will be announced.



## Correspondence.

—o—  
To the Editor of THE CAMERA.



THE Eastman Dry Plate and Film Company have written to us with reference to a recently-published article in a contemporary (which, by the way, we have not seen) which they allege calls in question the permanency of gelatino-bromide paper. We are sorry that we cannot afford space to insert the whole of their letter, but we have pleasure in printing the following quotation from it:—

"The idea that it is enormously difficult to remove the last trace of hypo from paper is a complete delusion, and arises from the fact that until recently, whenever a print on albumenised paper failed, it was assumed that, in spite of the washing it had received, hypo remained in it. Recently, it has been shown that such an assumption is entirely without foundation. It is by no means exceedingly difficult to remove the last trace of hypo from paper. Let anyone wash carefully in continually changing water prints on bromide paper which have been fixed, and, at the end of that time, apply the most delicate test known for hypo, and he will find that all trace of it is gone.

"Finally, what we claim for our permanent bromide paper is that prints on it are permanent in as complete a sense as it can be said that any print is permanent. That is to say, that there is no reason to suppose that any change should take place in the image, whilst there is very considerable reason to suppose that none will, inasmuch as the causes of failing in ordinary silver prints have been eliminated. Thus the image is in metallic silver, which is a very stable body, whereas, as far as is known, the image of a print on albumenised paper is in an oxide of silver, which is far from being stable. At no part of the process of manufacturing the bromide paper does the film come in contact with free nitrate of silver, which contact is really at the root of most cases of failing in albumenised prints. In fact, the image is of the same nature as that on a collodion negative, except that it is *in* not *on* the film, and, therefore, is better protected.

"It is generally granted that gelatine negatives are permanent if tolerable care be taken to wash them. Prints in gelatine bromide are of precisely the same nature."

## NOTICE.

The EDITOR will be glad to receive literary and artistic matter of general interest to Photographers; and begs to direct attention to the following rules:—

If stamps be sent to cover cost of postage, the EDITOR will do his best to ensure the safe return of contributions which he is unable to make use of.

Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.

All communications should be addressed to the EDITOR OF THE CAMERA, 15, Bedford-street, Covent Garden, London, W.C.

All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

—o—  
MICROSCOPE.—The mounting of objects in Canada Balsam is quite beyond the scope of this journal. Consult Carpenter or Beale's standard works. There is also a capital little manual which will, perhaps, better answer your purpose. It is by Davies, and is published by Hardwicke.

DABBLER.—The manufacture of pyroxyline is tedious, difficult, and certainly not worth while attempting for the small quantity required for the purpose you name. Get it at a good photographic chemist's, and tell the vendor what you want it for.

A. C.—It is quite true that a near approach to instantaneous work was possible with the old wet process, if certain conditions were observed. The stereoscopic pictures by Breeze, taken twenty-five years ago, are good examples of what could be done. Still, it must be remembered that his subjects were mainly seascapes, where he could obtain the maximum of illumination. Such pictures, however, if examined with a magnifier, or thrown upon a screen, will be found to be far behind modern ones. The required conditions were, as far as the chemicals are concerned, a very clean plate, an extra amount of bromide in the collodion employed, and a newly-prepared bath rich in silver.

PUZZLED.—The difficulty which you find in filtering the emulsion which you have made through wash-leather is not an uncommon experience; still, it is by far the best material to employ for the purpose. Add a little more water to the emulsion, and take care that it has not sunk to too low a temperature, and you will be all right next time. Several pieces of apparatus have been designed by which air-pressure is kept up on the surface of the liquid during filtering. Obviously the most simple of these is where a vessel is used to which the mouth can be readily applied.

JIM.—You can get what you require of undoubted purity at Hopkins & Williams's, Hatton-garden.

TYRO.—The markings on your paper are probably due to scum on the sensitising bath. You should be careful to remove this by passing a card across the surface of the liquid before commencing work, otherwise the first sheet sensitised acts as a duster, and collects all floating particles.

SENEX.—In our next.

H. V. A.—Your experience is quite an unusual one. Your best procedure will be to get some photographic friend to use some of the plates in question; but let him employ his own camera and chemicals. The result will show whether you, or the maker, is at fault.

B.—The shutter which you name is efficient, but rather put into the shade by more modern contrivances. In purchasing it this should be borne in mind with a view to reducing the original price considerably.

G.—The article is a good one, but as it has already appeared in five different London journals, we should not care to raise a blush to our printer's cheek by asking him to put it into type.

ARNOLD.—The holiday time of year has lately upset business arrangements a little; but the matter shall appear in print very soon.



# ✻ THE CAMERA ✻

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

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## Sayings and Doings.

**M**R. VERNON HEATH—who may rightly be called in this country the father of photography, for he has been at work with the camera since 1840—has recently called attention, in a letter to the *Times*, to the way in which photographers have been favoured this year in regard to weather. He points out that for his work to be thoroughly successful, not only is a fine day needed, but one which is so calm that the foliage is motionless. Experience has taught him that the number of such days in a year which may be looked for can usually be counted upon the fingers of one hand. But 1886 has been quite phenomenal in this respect, for it has yielded fifty such days. On Thursday, the 14th ultimo, Mr. Heath took seventeen negatives between ten and four o'clock, and at the place where these were taken—Bentley Priory, Stanmore—not a leaf was astir to trouble him. At Wandsworth, only ten miles away, a high wind was blowing, the precursor of that terrible gale which has lately wrought such havoc on our coasts.

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THE *Pall Mall Gazette* has published some valuable remarks upon picture-framing, which we reproduce on another page. The Photographic Society cannot certainly be accused of red-tapeism in the matter of frames, for all kinds have been admitted to the present Exhibition in Pall Mall. One exception is made, however, and it is a most sensible one. The so-called "Oxford" frames, with their redundant corners, are refused. They take up far too much room, but their machine-made

cheapness is a temptation to their employment. We know of one exhibition where an enthusiastic contributor (there was no fee for wall space) sent in no fewer than sixty small photographs, each framed on the "University" (?) pattern. The hangers nailed up twenty of them and then struck work in disgust.

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A FEW years ago the art of photography was of such limited general interest that a mere paragraph in the newspapers would have been considered sufficient to record the opening of an exhibition of works in black and white; but now matters have assumed such a different aspect that all the leading papers find it necessary to devote considerable space to an account of the annual Exhibition in Pall Mall. The *Times* headed the list last month with a column and a half of well-written matter, from which we extract the following remarks:—

The first impression of the gallery is distinctly good, and if a more careful examination does not quite bear out this first impression, it is, at all events, certain that the collection is not below the standard of recent years. The general average is very high, but the average of really fine work is not exceeded. This is not remarkable. The best photographers seem to have reached as high a level of artistic and technical excellence as they are likely to attain. The scientific improvements of the past few years have facilitated production, but they have not increased either the pictorial capacities of the art itself, or the artistic powers of those who practise it.

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THE "International Competition of Automatic Engraving," the completion of which was announced in the last issue of the *CAMERA*, terminated in a distribution of certificates of merit at a concert given in aid of the funds of the Printers' Pension Corporation, on the 12th October. The competition was suggested in 1885 by Mr. J. S. Hodson, the secretary of the Printers' Corporation, and the object, as stated in the prospectus, was



to give an opportunity "by which artists, authors, printers, publishers, and others might acquire some satisfactory knowledge of the peculiarities and advantages of the various processes of so-called automatic engraving, and their adaptability to particular descriptions of work." There were fifty-four exhibits, and certificates of merit have been awarded as follows:—

## CLASS A.

The Typographic Etching Company .....First Prize.

## CLASS B.

Angerer and Göschl (Vienna) .....First Prize.

The Direct Photo Engraving Company .....Commended.

## CLASS C.

Mr. James Akerman .....Commended.

## CLASS D.

The Woodbury Type Company .....First Prize.

The Automatic Engraving Company .....Second Prize.

+ + +

MR. BURTON, of New Zealand, made his first appearance on the lecture platform a few evenings ago at the Colonies Exhibition, and made a very favourable impression upon a large and interested audience. His account of the horrors of the recent volcanic outbreak, aided as it was by excellent photographs of the scenes described, was listened to with breathless interest. The lecture was certainly a great success.

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ONE story which Mr. Burton related is both inexplicable and uncanny. Indeed, we have never heard anything like it before, if we except the more elaborate history of the Phantom Ship, as related by Captain Maryatt. The story runs as follows:—Ten days before the recent outbreak in New Zealand, namely, on May 31 last, as a party of tourists and their native guides were returning by water from an excursion, they suddenly saw near them a fully-equipped Maori war canoe. The vessel was hailed, but no reply came from it. It continued its silent path, and disappeared from sight. The Maoris in the tourists' boat were terribly excited, and Sophia (whom Mr. Froude has described in "Oceana") stated aloud her impression that the sight they had seen was the harbinger of evil, and that she knew that she should guide very few more tourists to the pink and white terraces. Her words were prophetic, for ten days afterwards the terraces were destroyed.

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MR. BURTON was told this story by one of the eye-witnesses—a merchant of repute, who was in the tourists' boat at the time. No war vessel of the kind described is known to be anywhere in the neighbourhood, but there are rumours of the appearance of one in former times, and such an appearance has always been followed by disaster to the natives. "What theory have you to explain this curious episode?" we asked. "I have none," said Mr. Burton.

## SILVER PRINTING UPON SPECIAL PAPERS.

BY J. F. MOSTYN CLARKE.



HERE are, no doubt, many among photographers and those interested in photography who feel how very unsatisfactory, from an art point of view, are all the results obtained with albumenised paper, and the writer having felt for a long time the hopelessness of accomplishing anything with it, was led to make numerous experiments, giving much time and thought to the undertaking.

The papers he used were some of the finest obtainable, frequently used for etchings and fine drawings, such as vellum-surfaced Japanese, rough-surfaced Japanese, "réal" Indian, white and buff Cartoon.

With the vellum Japanese and Cartoon, after a little experimenting, which it would be useless to record, the following formula—similar to that given by Capt. Abney in his "Instructions"—was adopted, and found to be everything that was desirable:—

Ammonium chloride	....	100 grains
Gelatine	.....	10 "
Water	.....	10 ounces

The gelatine is dissolved in hot water, and the salt added, and well mixed. The solution is then poured into a flat dish of convenient size, and the paper floated for about three minutes.

To float a sheet of paper, place the dish containing the salting solution upon a level table, carefully removing all bubbles floating upon the surface of the liquid. Take the sheet of paper by two opposite corners and, holding it horizontal, bend the lower surface in such a manner that the lowest portion of the sheet lies between the remaining corners. Now lower it gently on to the solution, move the hands gradually apart and at the same time slightly downwards, until all the sheet is in contact, pressing down the edges with the finger-tips where, until it has become damped, they are inclined to curl away from the surface of the liquid. One end is then raised, and the surface of the sheet examined for dry spots, which is done by holding it so as to reflect the light. The writer found that with the rougher surface papers—such as Cartoon—the surest method of removing these blemishes was to brush them over with a small piece of clean wool, such as may be obtained from the chemist, keeping the paper all off the liquid while it is being done, and afterwards returning it for the remainder of its three minutes. It was found quite useless to merely break the bubbles, as they only formed again through the surface being dry.



Sponging before floating was inclined to leave lines or marks, but steaming at the spout of a boiling kettle was somewhat preventive of their formation. The writer, however, prefers the wool method, as it can be used with all the various solutions. When the paper has remained for the stated time upon the solution, it is removed gently, and hung upon a line by one corner to dry, the last edge to leave the liquid being lowest. Before commencing the operations, the paper should be marked upon the reverse side (the rougher).

When the surface is *quite dry*, the paper is floated upon a fifty-grain silver bath in a similar manner, wool being used, if necessary, as before. The sensitising operation must be performed in an non-actinic light.

When the paper curls to an abnormal extent, so as to be quite unmanageable, the steaming will be found a great help, as it softens the paper and renders it more pliable. The Japanese will be found tractable enough; it is the Cartoon that is most inclined to give trouble, on account of its thickness; but with a little practice these difficulties will pass away, and the various operations proceed with greater ease.

With the Indian paper greater difficulty was experienced, on account of its thinness and liability to tear—a means having to be found for giving it support during the various manipulations and final washing. It had also to be a means that would in no wise interfere with any part of the sensitising process. After some thought, the writer concluded that albumen was the best for adhesive purposes, being not readily soluble in water, and at the same time part of the preparation of ordinary paper. His idea also was to obtain a paper that, without having a shiny and hard surface, yet would combine the firmness of albumenised paper with the depth and delicacy of feeling given in the Japanese, and thus to enable the most delicate copies of pictures being printed satisfactorily.

The first experiment was to take Capt. Abney's formula for albumenising:—

Ammonium chloride.....	160 grains
Spirits of wine .....	4½ drachms
Water.....	4½ ounces
Albumen .....	20 ounces

And float the thicker paper for about a minute and a half, when the surplus was allowed to drain away, and the paper laid upon a flat surface, albumenised side upwards. The Indian was then treated in a similar manner for half a minute or less, the wrong side of the paper being placed in contact with the solution, and, after thorough draining, was laid upon the stouter sheet and pressed flat with clean blotting-paper, which had the simultaneous action of removing the surplus albumen that would otherwise have caused a

variegated surface, glossy in some places, dull in others. After being allowed a few minutes to set, the paper was hung by the corner to dry, and then sensitised upon a bath of fifty grains of silver to the ounce of distilled water.

Before printing, the paper looked most promising, having a beautiful surface something similar to that of an etching. The promise, however, was never fulfilled; for when placed in the frames a mottledness developed itself, rendering the larger part of the batch useless—indeed only one little picture, about two inches square (still in the writer's possession) was anything approaching perfect; but it was such as to make it worth while to labour for the perfecting of the process, being most delicate, and having more the appearance of an etching than of a photographic picture.

The mottledness—being due to the insufficiency of salt in the albumenising solution—was easy to remedy, but what was more difficult was the correction of other blemishes, such as brown marks, lime-bubbles under the surface of the Indian paper developed in the final washing; similar marks of a greenish colour developed in the same manner; marks that dried a yellow bronze in colour with lighter edges. The majority of the defects, it was evident, came from an uneven distribution of the albumenising solution beneath the thinner paper, which, containing the salt, rendered the salting uneven. This was, to some extent, proved when a few sheets of the paper prepared as above were subjected to a bath of ammonium chloride, containing about eight grains to the ounce of water; for the resulting print was free from mottledness, but had the other evils, if anything, increased.

It was now quite clear that the amm. chloride and albumen must be separated; the latter applied to the printing surface only, and the former applied as evenly and thinly as possible. Thus the following method was adopted, and found satisfactory, if conducted with great accuracy and care:—

The whites of a dozen eggs are beaten up, and allowed to settle, mixed with about two drachms of spirits of wine, and filtered carefully into the dish to be used. The supporting paper having been laid upon a flat surface, the Indian is floated as before upon the albumen, and drained by drawing off in contact with the edge of the dish, when it is laid in position on its support, and pressed quite free from air bubbles. The best method of laying it is to adjust one end first, and gradually lower the sheet until it is in contact all over.

When the sheets are quite dry they are floated upon the gelatine solution modified as follows:—

Ammonium chloride .....	125 grains
Gelatine .....	10 "
Water .....	10 ounces



When again quite dry, the sheets are floated in the ordinary manner upon the silver bath of from fifty to sixty grains to the ounce of distilled water, wool being used as before.

If during washing, toning, or fixing the prints show signs of producing any defects, such as bubbles of the colours described, it is a safe plan, immediately after fixing, to strip the Indian paper from its support, as this effectually prevents their formation, especially as it has to be done sooner or later, to enable the print on the Indian paper being remounted on card or paper of the tone to suit the subject; this is another advantage of the Indian, it being possible to give what tone is needed by letting a tinted card tone the whole from the back.

A little common salt placed in the first washing water is a safe precaution, and it can do no harm. The writer has been unable to ascertain for a surety whether this prevents the formation of bubbles, but he is inclined to think that it does.

The rough-surfaced Japanese was found to give most satisfactory results when floated on an ordinary albumenising solution and left to dry. It is such an exceedingly porous paper that the albumen sinks right in, and the surface dries to a beautiful dull smoothness when it is immersed in the silver bath (not floated). When it was floated, marks like water-marks in silk resulted from the silver penetrating more readily in some places than in others. In fact, so porous is this paper that it assumed the appearance more of a film than a paper during the manipulations.

The writer found very excellent results accrue from the following treatment:—The paper was floated on albumen (without salt) as for Indian, and allowed to dry; then immersed in the solution—

Ammonium chloride .....	150 grains
Gelatine .....	10 „
Water .....	10 ounces

and when again dry, immersed in the 50-grain silver bath.

It was found necessary to use a slight paper for supporting the Indian, as when a thicker was used the two papers separated in the first drying. Another reason for supporting the Indian paper was found in its uneven shrinking when albumenised and allowed to dry by itself, resulting in a wavy surface, which could not be easily given good contact in the printing-frame.

The gelatine solution was also tried with this paper, used without a thicker to support; but the gelatine appeared to be too easily soluble in the water during toning and fixing, thus losing its support and tearing. Hence another reason for the use of albumen.

To keep a silver bath in order, the method of using kaolin given in Mr. H. P. Robinson and

Captain Abney's book\* will be found very simple and easy to work. It is as follows:—Place in the bottle containing the nitrate of silver bath a teaspoonful of kaolin, shake up well, and allow it to settle, afterwards filtering through a filter-paper into a clean glass bottle or other vessel. The different methods of keeping the bath in order will be found at length in the books referred to above.

In printing the Japanese and Cartoon papers, care should be taken to note their different phases, when they will be found to differ slightly from the ordinary papers in that they lose considerably more depth in the toning and fixing, and instead of this being counteracted by the print drying darker, it has to be allowed for in the opposite direction; in other words, the prints dry lighter. Then, again, if the gelatine solution is weak, the prints will lose more depth in toning and fixing than if it were strong. The Indian paper, on the contrary, when made with albumen, loses hardly as much in depth as ordinary albumenised paper; but with both the finest results are obtained when they are sensitised, printed, and toned, on the same day, and without the use of any preservative. The longest time they will keep after sensitising may be given as three days, the results getting weaker as the time increases. The writer had some of this Japanese paper prepared commercially, when a trade preservative was used with it; and he found that it printed slowly, was inclined to give weak prints, besides there being some action that injured the surface of the paper itself. Hence, though the results were good, and far superior to ordinary Saxe dull surface paper, they were in no way to be compared with those obtained with paper prepared at home. This may be said to apply in a less degree to all commercial sensitised paper.

The process of toning and fixing Japanese, Cartoon, and Indian paper is much the same as for the ordinary papers, only the former solution must be mixed slightly weaker, as they are inclined to take the gold more readily. They only give two colours, dark purple-brown and black. The process of fixing and washing is the same in every respect, only greater care must be taken to ascertain whether the soda salts have been completely eliminated, as, owing to the thickness and porosity of the paper, it is inclined to hold them with a greater tenacity.

One of the great advantages of dull-surface paper is the ease with which it can be treated after being converted into pictures, by broad washes of colour. Thus, if the background of a portrait be incomplete, the picture requires base balance, or the balance of

\* "The Art and Practice of Silver Printing." Piper & Carter.



light and shade be not perfect, the error may be rectified by treating with a little water-colour or Indian ink of the same tone as the picture. In a similar manner the shadows of the face can be touched where they need it.

Some years ago, before the introduction of gelatine plates, and when the art of photography was not so generally practised as it has been latterly, this method of finishing would have been considered derogatory. This, it is needless to say, was a totally false notion, especially as they included in it the printing-in of clouds; for the object that should be aimed at by all photographers is to make the most perfect picture, using the camera as a means, and not the production of something which only plays a secondary part to the instrument with which it is accomplished.

It is almost an impossibility to give more than an indication of class of work suited to each of these papers, so much depending upon the individual picture; but speaking generally, the vellum-surface Japanese is most useful for views and some portraits. The Indian and rougher Japanese is best for picture reproduction, the latter giving the effect of a mezzo-tint etching. Portraits are good, printed on both, the former, if anything, giving the greater feeling. Cartoon is good for nearly all kinds of printing, but much must be left to the judgment and knowledge of art in the photographer.

To the best of the writer's knowledge, the two kinds of Japanese paper are only obtainable from Mr. Robert Christie, of 102, George-street, Baker-street, and the "real Indian" from L. Cornelissen & Son, of 22, Great Queen-street, Lincoln's-inn-fields, both of whom import direct from the East. There is a French-Indian—the more common—generally kept; but this will not give satisfactory results from an art point of view, as it has not the delicate surface, the real paper being made in China.

## THE WOODBURY FILM.



WE have lately had an opportunity of trying the Woodbury film, and have no hesitation in saying that the system is one which can be worked with the greatest ease. Its convenience to the tourist is, of course, undisputed, for a packet of twenty-four half-plate films weigh but an ounce or two, while the same amount of sensitive material spread on glass plates would weigh several pounds. We considered it a matter of fairness, in dealing with the films, to strictly follow out the instructions issued with them by the company. We used a camera fitted with the convenient Vergara double back, in which the tissue for two exposures can be inserted in two

seconds, and a Wray rectilinear lens, the definition and covering power of which, we may note in passing, are most admirable. The stop used was  $\frac{f}{32}$ , and the subject was the only one available at the time—the back gardens of several houses shut in by brickwork, as viewed from a London window. The day was dull, and one upon which it would be impossible by any known process to get a brilliant landscape negative. But as we could not hope for many bright days at this time of year, and as we were anxious to make a trial of the process before going to press, several exposures were made, varying from one to three seconds.

After the film was removed from the dark slide we dipped it in a deep tank of water, holding it by one edge, and immersing it half a dozen times. We thought that this rapid putting in and out of the water would effectually sweep off from the surfaces any air-bells which might otherwise cling there. This hope was confirmed, and we had no need to use a brush for the purpose, as recommended in the printed instructions.

For development of the films we employed the following modification of Beach's well-known potash developer, the formula for which is published by the Company, and recommended to be used:—

### No. 1.

Distilled water (warm) .....	4 ounces
Sulphite of soda (crystals) .....	4 "

When cold, add

Sulphurous acid .....	4 "
Pyrogallie acid .....	1 ounce

### No. 2.

A {	Distilled water .....	4 ounces
	Carbonate of potash .....	3 "
B {	Distilled water .....	3 "
	Sulphite of soda.....	2 "

Mix A and B.

### No. 3.

Bromide of potassium .....	1 ounce
Water .....	10 ounces

TO DEVELOP.—To each ounce of water, 30 drops of No. 1, and 20 drops of No. 2. If action cease before having obtained the desired density, add 10 drops of No. 2 per ounce. Add a little of No. 3 in case of over-exposure.

The image came up rather more slowly than we anticipated, but, after it appeared, it rapidly gained density, and development was complete in about five minutes. The film was then rinsed in a dish, and at once transferred to a freshly-made hypo-bath. Fixation was complete in seven minutes, after which the film was washed in several changes of water, and finally left to soak in the before-mentioned tank. The negatives are full of detail, and are quite as good as glass negatives could have been if they had been taken under similar conditions of weather. They show no trace of grain, and we have no doubt that they will yield good prints.



## THE OPTICAL LANTERN.—I.

BY THE EDITOR.



HERE is one familiar quotation which very aptly describes the feelings of the enthusiastic amateur photographer when he knows that the trees have shed their leaves, and that the season for outdoor work has come to an end. "Now is the winter of our discontent," he is apt to murmur as camera, lens, and tripod are put away for their five or six months' rest. But the winter need not bring discontent to the earnest worker, for there are many ways of employing the time photographically, although the camera need not take part in the work. Negatives can be printed from in these days without help from the sun by means of the various quick-printing papers now in the market. Other negatives can be retouched, intensified, or reduced, or if of too hopeless a character for resuscitation in such ways can be made to yield a positive from which an improved negative can easily be procured. But without doubt the most attractive means of passing the wintry hours is by aid of the optical, or, to use a more common adjective, the magic lantern. We hold that as the lantern in its improved forms has long ago emigrated from toyland, the word "magic" may be dropped, and the more suitable term, first suggested, we think, by the late Mr. Dalmeyer, be substituted for it.

We need not trace the past history of this useful instrument, nor need we speculate whether modifications of it were used in ancient temples of worship for producing optical illusions in order to impress the credulous worshippers. The lantern as we now know it—but, of course, of far more primitive construction—may be traced to the middle of the sixteenth century. It remained without any improvement worth speaking of until new methods of illumination came to be discovered. Thus the old oil-lamp, which was just sufficient to make darkness visible, gave place to gas; and now gas has been deposed in favour of the far more brilliant illumination possible with specially-constructed lamps burning hydrocarbons of the petroleum family.

For the present, we need not consider the claims of the beautiful limelight, with which exhibitions of the highest class and upon the largest scale are possible. Nor need we at present discuss the question of the application of the electric light to lantern purposes. Both these matters will receive full attention later on, and the best methods of working both with limelight and electricity will be fully described.

As our purpose in these articles is to see how far the optical lantern can be wedded to photo-

graphy, or rather can be made a useful handmaid to the art, we must approach the subject in a somewhat different manner than if it was our intention to write a treatise on the instrument *per se*. Firstly, let us briefly consider in what ways the instrument can be made to subserve the purposes of the photographer. He can use it for making enlarged negatives or positives on glass, paper, or other material; or he can employ it as a means of exhibiting positives taken from his negatives, and forming lantern-slides. The same lantern can be used for both purposes; but, at the same time, it is better, if possible, that the optical system of the lantern be capable of modification according to the use to which it may be, for the time being, put. In order to better explain our meaning, let us briefly review the construction of the lantern itself.

The body of the instrument is a light-tight and well-ventilated box made of wood, sheet-iron, or, as in the best instruments, wood with a protective sheet-iron lining. In front is an opening containing the optical system. This consists of two parts, each of which has its own particular duty to perform. First, next to the lantern body, and therefore nearest the light source, there is the condensing lens. This is usually about four inches in diameter, and is of compound construction, that is to say, it consists of two lenses mounted in one cell, and therefore regarded, for the sake of simplicity, as one lens. The purpose of this condenser is to gather the rays of light from the lamp behind it, and to cast them in the direction of the lantern-slide or picture, which is placed immediately on the other side of the condenser. In oil-lanterns the lamp is furnished with a silvered reflector, so that the back as well as the front rays of the lamp are projected through the condenser.

The other part of the optical system of the lantern is the objective. This may consist of an achromatic lens, like the so-called simple lens often used in landscape work. But, if such a lens be used, it should not be of shorter focus than about eight inches. If a shorter focus is desired—and this is commonly the case when the lantern is used in a sitting-room, where it must be comparatively close to the picture projected by it—one of the portrait type is the best to employ. A quarter-plate portrait lens is the one most usually adopted, and most makers of lanterns have used this type of lens as a model from which to construct one better adapted to the lantern, in providing a larger aperture, and therefore transmitting more light. A short focus half-plate portrait lens is also capable of giving very beautiful results. The late Mr. Dalmeyer read a paper before the Photographic Society of Great Britain upon improved lenses for the optical lantern, and he subsequently introduced



them commercially, both in the form of condensers and objectives. It need hardly be said that they are of first-rate quality; but their high price, compared with other lenses in the market which give scarcely inferior results, is against their general adoption.

In choosing a lantern, the photographer must be guided by his requirements. If he wants it solely as an enlarging apparatus his course is clear. The size of the condenser must be his first consideration. It must be large enough to cover the negatives from which his enlargements are to be taken. If he has been working with quarter-plates, with the settled purpose of subsequent enlargement, and has kept his subjects well within a circle of 3 inches, a  $3\frac{1}{2}$ -inch condenser will do all that he needs. Supposing, on the other hand, that he has been producing negatives on *half-plates* (i.e.,  $6\frac{3}{4}$  by  $4\frac{1}{2}$  inches), that their enlargement is an afterthought, and that he wishes to reproduce them without cutting off any of the subject, his condensers must measure at least 7 inches in diameter. We understand that the Autotype Company, who produce commercially so many pictures of enormous size, employ the limelight and a condensing lens measuring about 20 inches in diameter. Such a lens would, of course, only be used when negatives approaching that size have to be enlarged.

For the mere exhibition of pictures by means of the optical lantern, a large-sized condenser is a positive disadvantage. Let us try and understand why this should be the case. The standard size for lantern pictures is  $3\frac{1}{4}$  in. by  $3\frac{1}{4}$  in., and when such a picture is furnished with its cut-out paper mount, and gummed together with paper binding-strips, the available picture is reduced to about  $2\frac{7}{8}$  in. If the picture be in a circular mount of this size, a condenser measuring  $3\frac{1}{2}$  in. in diameter will be amply large enough for it; but if the picture be mounted in a square or cushion-shaped mount, the condenser must be half-an-inch larger, otherwise its corners will be cut off when projected on the sheet or wall. An inexperienced buyer will be very likely to think that the larger the condensing lens the better the lantern. We have already pointed out that if the instrument be intended solely for enlarging purposes, the larger the condenser is, within certain limits, the more covering power it will possess. But it is easy to show that, for purposes of exhibition, the larger the condensing lens is, the smaller is the amount of light which it will transmit to the picture placed against it. The reason of this is that a condenser of small diameter—such as  $3\frac{1}{2}$  in.—can be placed nearer the light source than one of larger size. It, therefore, intercepts more light-rays, and turns them into the required direction. The matter can

be well demonstrated by means of a lady's fan. Open the fan to its utmost extent, and suppose that its ribs represent the rays of light spreading from a certain point. Now, place a card measuring  $3\frac{1}{2}$  in. long across the supposed light rays, and at a distance of three inches from the supposed source of light. Note how many of the rays are cut across by the card. Now move the card a couple of inches away, and note how many are lost. We may, therefore, take it for granted that the nearer the light can be placed to the optical system, the more light can be transmitted through it. At the same time the distance must, of course, be identical with the focal length of the condenser employed. Makers have been very successful in producing condensers of such a form and focal length that the light can be approached to them as closely as possible. But there is, of course, a limit to this closeness, for the glass is apt to crack if the source of light and heat be too near to it.

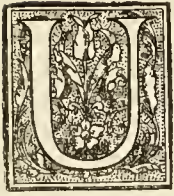
Many amateur photographers now regard the optical lantern as a necessary part of their equipment, for by its means they are able to describe to their friends during the dark winter evenings, the tours and pleasant outings which they have had during the past season. And pictures shown in this way, let it be remembered, are far more effective than if they were printed on paper and mounted on an album. Take, for instance, the case of a man who confines his efforts to quarter-plates. He prints them off on paper, pastes them in an album—perhaps half-a-dozen on a page—and shows them to his friends. The said friends endeavour to trace details with the help of a magnifying glass, and with a great screwing up of facial muscles, and they politely remark that the pictures are very good for an amateur, and they probably feel very much bored. But let the same pictures be printed on glass as lantern slides, and magnified on the wall to the very modest size of four feet, and then let the same critics be asked to view them. Their verdict will now be very different. Details before quite invisible will become apparent, and there will be no unnecessary straining of the eyes in viewing them. Moreover, and here is a point of supreme importance, a couple of dozen persons can view each scene at the same moment, and exchange their remarks upon it. The little, insignificant, and despised photograph which before did not satisfy the individual eye, is changed, by the help of the optical lantern, to be a source of delight to many.

We hope in the course of these articles to point out the various methods by which lantern slides can be produced from photographic negatives, and to give practical hints upon the management of the lantern generally.



## HALF-TINT PICTURES FOR BOOK-ILLUSTRATION.

BY JAMES SHIRLEY HODSON.



UNDER the general designation of *Zincography*, the simplest forms of photographic reproduction have been explained in a previous issue of the CAMERA (see p. 90); the reader will, therefore, be prepared for the

consideration of the more difficult task of converting a half-tint picture into a relief or intaglio plate for printing.

In multiplying copies of half-tint subjects by means of photographic printing, the matter is simple enough; neither are there any difficulties presented when the printing is performed by the helio-type, the Woodburytype, or the Stannotype processes. When, however, the ordinary mechanical means of printing have to be employed, such as by the copper-plate, the lithographic, or the typographic press, special conditions are required in the printing surface which do not exist in the original. In all these cases a stipple, grain, or system of lines has to be introduced, by which the half-tints are to be presented. It is not possible (so far as is at present known) to provide in any other way a suitable resting-place for the ink upon the surface of the plate, previous to its transference to paper, in the work of multiplying impressions. The same conditions as apply to artistic engraving apply equally to automatic engraving. The line method is employed in that description of engraving which is familiarly known as "line

engraving," as well as in wood engraving and etching, which is at the present time the most popular form of the engraver's art. The stipple or grain method forms the essential peculiarity of mezzotint and stipple engraving. The two forms of aquatint—the intaglio and the relief—are also based on this method.

Among the process-operators or photo-etchers there have been several who have essayed the task of overcoming the difficulties above pointed

out. Foremost among these was the late Mr. Walter B. Woodbury, the discoverer of the process of Photoglyptie, to which his name is still attached, as well as of the more modern process of Stannotype. The method he devised was by the interposition in the camera of a gauze between the object to be photographed and the sensitised plate. The result was a dual photographic image, combining the lines of the gauze with the tints and half-tints of the photograph. This plan, although theoretically sound, had to be abandoned, in consequence of the net-work of lines produced on the plate being of too coarse a texture; the gauze being nearer to the plate than the object photographed, the lines



The late Mr. Woodbury.

were necessarily magnified to an unsuitable degree.

In the "International Competition of Automatic Engraving" which was completed last month, this *pons asinorum* for photo-etchers has been distinctly recognised, and out of the six original subjects selected as tests of the utility of the various processes, four were specially chosen as presenting in a very marked degree the difficulty above pointed out. These four subjects com-



prised an original drawing in monochrome by Shirley Hodson, a photograph of sculpture by Mr. England, a photograph of landscape by the Military School of Chatham, and a portrait-photograph by Messrs. Window & Grove.

Probably the next discoverer in the direction of producing a system of lines in photographic relief blocks was Mr. Frederick E. Ives, of Philadelphia, who invented and patented a plan for this purpose in 1881. Mr. Ives's method is altogether different from Woodbury's plan, as he produces his lines mechanically. The following is the patentee's description of his process, which has been communicated specially to the writer of this paper:—

"A thin film of gelatine, sensitised with bichro-

by Messrs. Crosscup & West, of Philadelphia, who are satisfactorily working the process. This block is taken from "An Historical and Practical Guide to Art Illustration," by J. S. Hodson, and is introduced here by permission of Messrs. Sampson Low & Co., the publishers.

An instance of the application of Ives's process to landscape is furnished in the next illustration, "A View on the Battlefield, Gettysburg, Pa.," which is courteously lent by the proprietors of the *Art Journal*, in which publication it appeared in 1885.

The process which is next in historical sequence is that invented and patented by George Meisenbach, and which is known in this country as the



Battlefield of Gettysburg.

mate of potash, is exposed to light under an ordinary photographic negative of the object to be reproduced, then swelled in water, and a cast taken in plaster of paris. The highest portions of this cast represent the blacks of the picture, the lowest parts the whites, and the middle shades are represented by variations of height between the two extremes. To produce upon the white surface of this relief an impression which will represent the variations of shade by black lines and stipple of varying thickness, an evenly-inked surface of elastic V-shaped lines or stipple is pressed against it until the required effect is obtained."

As an illustration of the effects produced by this process, a portrait of the late Mr. Woodbury is here given, which was one of the earliest examples

"Meisenbach process." The patent (for the information of those who may desire further to pursue the subject) has been taken out in the name of Frank Wirth, "a communication from George Meisenbach, of Munich, in Germany."

The following is the technical description of the process furnished by the specification:—A transparent plate is hatched or stippled in parallel lines. A transparent positive is made of the object. The two plates are joined, preferably face to face, and from the combined plates a definite negative is photographed in the ordinary way. In order to cross-hatch and break the lines of the shading, the hatch or stippled plate may be shifted once or twice during the production of the negative. The photographic negative thus obtained may be either



applied direct to a zinc plate, or a lithographic transfer may first be made in the usual manner, and the plate subsequently bitten by acid to form a block in relief. The part of the process specially sought to be protected by the patent is the shifting of the hatched or stippled plate. The present and previous numbers of the CAMERA contain some admirable examples of the process.

Both Ives and Meisenbach in their patents claim the right to use a grain or stipple as well as lines, but in practice, at least, they seem to prefer the line method, if they do not exclusively adopt it. This method is also successfully adopted by Angerer & Göschl, of Vienna; by Petit & Cie., of Paris; by the Moss Engraving Company, of New York; and by several others. The Typographic Etching Company, of London, and Messrs. Boussod, Veladon, & Cie. (late Goupil & Cie.) seem to confine themselves, on the other hand, to the stipple method. An example of the stipple method by the Typographic Etching Company is here given, the subject being the reproduction of a bas-relief of the Mausoleum, the photograph having been taken from the originals in the British Museum.

In describing another method of producing a stipple or grain, such as is used in the excellent engravings with which all are familiar under the title of Photogravure, we must go back to Fox Talbot's second patent, dated 1858. This method depends entirely upon the granulation of the gelatine film upon which the picture has been photographically printed.

To make the gelatine film Fox Talbot gave these directions:—"About a quarter of an ounce of gelatine is dissolved in eight or ten ounces of water by the aid of heat. To this solution is added about one ounce by measure of a saturated solution of bichromate of potash in water. The mixture is strained through a linen cloth, and should be kept in a dark place." This gelatine mixture is flooded over a perfectly clean and polished copper-plate, which, after the entire surface has been coated, should be placed on one of its edges to drain off any superfluous portions of the mixture. Heat is now to be applied to the under surface of the plate, when a thin, pale-yellow film will be found evenly coated over the plate. The required picture is then to be printed upon the plate by placing the two in a photographic printing-frame in the ordinary way. Wherever the light is passed through the negative the pale-yellow colour of the film will have become changed to brown, while the original colour will be retained upon those parts which have been protected from the light. The picture having been printed on the plate, immersion in water will deprive the film of its sensitiveness, and leave it ready for the necessary granulation. If the plate be now submitted to a gentle and uniform heat, the gelatine will break up into a grain more or less

fine, according to the temperature to which it has been submitted. An aqua-tint ground, composed of resin and camphor dissolved in chloroform, being thrown over the plate before the application of heat, will greatly assist the granulation.

The heat evaporates the chloroform and discharges the camphor, leaving the resin in minute particles distributed evenly over the surface. The plate being now immersed in an acid solution, the unaffected parts of the gelatine film will soon disappear altogether, and the surface of the plate in



A Bas-relief of the Mausoleum.

those parts being exposed, will be attacked by the acid. The brown gelatine, which has become hardened as well as changed in colour, has the power of resisting, for a time at least, the action of the acid, and the particles of resin combined with the granulated portions of the gelatine, also resisting the acid, will leave a stippled appearance on the plate. These acid-resisters, it must be noted, are only efficacious for a time, and, therefore, after the preliminary biting which gives all the work of the picture is accomplished, the plate needs rolling-up with a compound of resin, ink, and



Brunswick black, which, being deposited on the plate, prepares it for a second biting. After each biting the plate requires to be washed in water, to cleanse it from the acid, and dried. Sulphate of soda added to the water more effectually removes all traces of the acid.

A few words may be desirable as to the mordant to be used for biting. Talbot recommended "muriatic acid; otherwise hydrochloric acid, saturated with peroxide of iron." Captain Abney suggests six ounces saturated solution of ferric chloride to one of water, as a suitable mordant. Usually nitrous acid  $33\frac{1}{3}$  parts to  $66\frac{2}{3}$  water, or nitric acid 25 parts to 75 of water, is adopted for the purpose. Whichever form of mordant be used, the strength must be adapted to the precise stage of the work in hand, and must be left to the judgment of the operator, founded upon experience, which is the best guide.

### NOTES FOR BEGINNERS.—III.

BY "DEXTER."



ALTHOUGH the beginner when first possessed of that magical piece of apparatus called the Camera—with its brightly-gleaming lens and spider-like legs—will long to take it at once into the open country, with the hope of bringing back with him pictures which will equal, if not excel, the work of the first professionals; he had better far remain at home and practise with his new toy under cover. An experienced photographer goes through the various operations of placing his camera, focussing, covering the lens, drawing the slide of the shutter, exposing, capping the lens, &c., &c., almost mechanically. The various movements come to him so readily and so automatically that now and then he will actually take a picture and wonder the moment afterwards whether he has really drawn the shutter or uncapped the lens. But with the beginner all is strange. He has, of course, his little instruction-book to refer to, but with over-confidence in his own powers he is pretty sure to leave this behind him. He will then often flounder in a sea of difficulties—will perhaps expose his first plate twice over, and forget to draw the shutter when he uncaps the lens for his second plate, and so on to other errors. I therefore advise him to practise the various movements necessary with the camera *indoors*. In other words, let him practise with blank cartridge before he trusts himself with ball.

Having perfected himself in the mere routine movements, by executing them over and over again in regular order, and perhaps assisting his memory by numbering them, he can then proceed to further study of the camera and lens. Let

him turn to Captain Abney's paper on the swing-back, which was lately published in this magazine (see page 29), and after having carefully read it, let him take his camera to a convenient spot round about the house and verify for himself Captain Abney's statements. He will learn a great deal more in this way than he would if he merely took those statements for granted. Everyone knows that a grain of practice is worth many grains of theory.

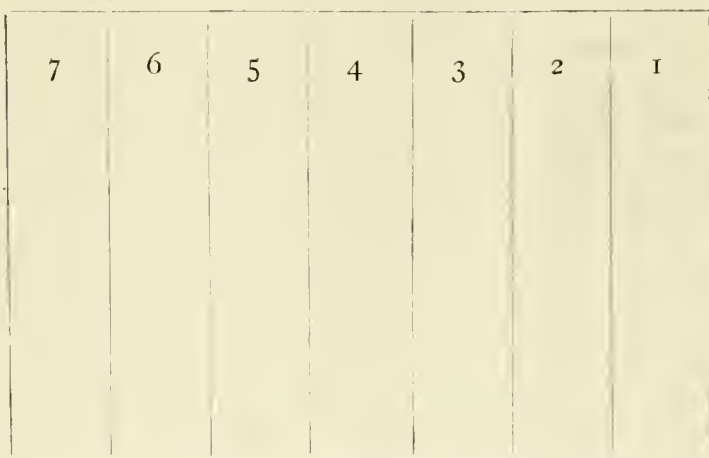
With a knowledge of the management of the camera and its fittings thus obtained, it may be thought that the tyro may at last trust himself out of doors, in search of subjects for his dry-plates. But let him pause once more and take another home lesson in that most important thing called *exposure*. Every photographer, whether professional or amateur, will acknowledge that correct exposure is the one great thing to aim at. This one thing achieved, the plate will produce a good negative with any developer you like to use. But this question of exposure is one which depends in great measure upon experience, helped by that faculty of observation which I fear is not very generally cultivated among us.

A little self-instruction in exposure can be most easily procured, and will save the beginner in the end much loss of plates, and possibly loss of temper. This is the way to proceed: Set up the camera so that the lens points out of an open window. We will suppose that it is of half-plate size—that is to say, it will take a picture measuring  $6\frac{3}{4}$  by  $4\frac{1}{2}$  inches. Before doing anything else, with a piece of chalk mark upon the blackened side of the shutter of the dark back, drawn out for the purpose, a series of distinct dots, at intervals of an inch apart. In this way it can readily be brought about that the slide can be drawn out one, two, or three inches, as may be required. Or the same result can be achieved by regulating the distance to which the slide is drawn with a two-foot rule. The chalk plan is the best, as the attention can then be concentrated on more important matters.

Focus the view from the window very carefully, cap the lens, charge the dark back with a gelatine plate, and proceed as follows:—Draw out the slide of the dark back one inch, and, timing your movements by a watch, uncap the lens for one second; draw out the slide for another inch, and uncap for one second; draw out another inch, and expose for one second, and so on, until the plate has had seven exposures. Now take the dark slide into a room which is only lighted by red light, or into a cupboard with a red lamp, and carefully draw open the shutter of the slide once more. Draw it open an inch at a time, as you did just now in the camera, and at every inch draw a line across the plate with a violet-ink pencil. Number the first division which you have thus marked off 7, then 6,



5, and so on, to that end of the plate which received only one second exposure. The plate will then appear like this:—



Now proceed to develop that plate, or, if you are quite a beginner, ask some more experienced hand to do so for you. The result will be a negative image of the landscape as seen from your window; cut up into seven different degrees of density. Most probably No. 7 will be so black that nothing but blackness is visible upon it; No. 6 will be nearly as bad, but as we get to

Nos. 3 and 2 we find that the portion of the picture which they cover is sparkling and bright, and that there is plenty of detail and delicate gradation from light to dark. No. 1 will probably be strong and hard in contrast, from not having received sufficient exposure.

Our trial-plate may now be kept as a guide for future working. The time of year, the hour of the day, and the kind of weather at the time it was taken, should be carefully recorded upon it; and the experiment may be repeated with advantage when, a few months later, different conditions prevail.

THE apparatus now on view at the Exhibition at Pall Mall formed the subject of discussion and demonstration at the technical meeting of the Photographic Society of Great Britain, which was held on Tuesday, Oct. 26, at the Exhibition Gallery.

## MACHINE-MADE DRY PLATES.

BY THE EDITOR.

(Continued from page 117.)



IN Fig. 3 we see the plates being cut up into marketable sizes, and the illustration needs very little explanation. The operator sits at a work-bench, with her red lamp in front of her. On this bench are two parallel grooves, between which the plate to be cut up freely slides. This movement is checked by a fixed stop, and at a carefully-measured distance from this is the ruler against which the cutting diamond is placed as it is drawn across the glass.

We believe that some manufacturers cut their



Fig. 3.—Cutting the Plates.

plates on the coated side, whilst others prefer to cut on the glass side. We have found the latter to be the easier plan, especially if the gelatine coating be at all thick. It would, perhaps, be a better plan to cut on the gelatine surface, and to use, instead of a diamond, one of the steel glass-cutters which can now be bought for a few pence.

At the same time that the glass plates are cut they are carefully examined, in order to see whether they are perfect. Those which are disfigured by air-bubbles, or by accidental abrasion, are at once put on one side for rejection; or, where possible, to be cut into still smaller sizes.

Lastly, the plates must be packed. Unlike ordinary goods, these dry plates have to be secured in their packing against many enemies. The glass is liable to breakage, being a most fragile substance; the gelatine is readily spoilt by damp; and, most important of all, the chemicals held in bondage by that gelatine are most readily affected by light, unless that light be filtered through a roseate medium. Most makers pack their plates with a piece of goffered paper on opposite edges, so that the sensitive surfaces, placed in pairs face to face, are prevented from coming into actual



contact. The plates so treated are then wrapped up in half-dozens in two or three thicknesses of red paper, and placed in a light-tight cardboard box. Some few other makers have adopted the admirable plan of issuing their plates in well-made grooved boxes, which are most useful later on for the storage of negatives. Such makers are wise in their generation, for at a time when there is really very little to choose between the different makes of plates in the market, the buyer is often influenced in favour of those with which such useful boxes are given away.

The machine which is used in M. Hutinet's factory for packing plates is shown in Fig. 4. This machine presents three systems of grooves—one lying on the table, and the other two at right angles with it—standing up vertically, and facing one another.

Goffered slips of paper are placed in these grooves, their folds readily adapting themselves to the grooves. The grooves are six in number, so that the machine will only hold six plates at a time. One by one the glasses are deftly placed in these paper-clothed grooves, until the six are in position. By a screw motion the side-pieces fall back and the six plates are left with the

folded paper slips between them. A few seconds will suffice to wrap them in non-actinic paper, and two such packages, put in a cardboard box, will be presently labelled and fastened up ready for sale.

When we consider that it was only a few years back that photographers prepared their own plates, at the time of using, by the wet process, we must acknowledge that the birth and growth of this new industry of dry-plate manufacture has been extremely rapid. Factories may now be counted by the hundred, and some of these coat two or three hundred pounds' worth of glass every month. A faulty plate is very seldom met with, for manufacturers know well that excellence of manufacture is the only passport to success, and they are careful accordingly. In nine cases out of ten, where an operator blames his plates, the fault is all his own. A bad workman quarrels with his tools.

## ON THE EXERCISE OF TASTE IN PHOTOGRAPHIC PRINTING.

BY VALENTINE BLANCHARD.



IN landscape photography the importance of clouds cannot be over-estimated; and as it rarely happens, except under an extremely favourable combination of circumstances, that they are secured in the negative at the moment of exposure, the printer who desires to produce an artistic result is compelled to cover the expanse of plain surface which does duty for sky in his print with clouds in harmony with his subject, and the manner in which he accomplishes this by-no-means easy operation will show

at once how far art feeling has entered into his photographic labours.

In these days of art progress, white paper can no longer be permitted to do duty for sky: and yet in some of the photographs in the present Photographic Exhibition there are some examples of cloud-printing which so outrage good taste that I would infinitely rather have the old monotonous white-



Fig. 4.—Machine for Packing Plates.

paper sky. In one of the examples of bad taste there is a mass of heavy clouds over an expanse of water so calm as to be almost without a ripple, and, by contrast, so white as to look more like snow than water. At a distance, the picture looks so top-heavy that one could almost imagine the picture had been hung upside down. In another, the clouds have been printed over the distant hills, and completely spoil an otherwise charming landscape. The prevailing fault appears to be a tendency to print in the clouds too dark, and, in consequence, destroy the aerial perspective—so important in a good landscape.

These defects are pointed out as warnings to the beginner; but there are yet others of equal importance which must also be named. The necessity of true perspective in the clouds introduced into the picture must be insisted upon, and there cannot



be a doubt that whenever there are clouds it would be well to make two negatives; in one giving the exposure necessary to produce full detail in the foreground, and in the other making such a short exposure as would perfectly render all the drawing of the clouds, ignoring altogether the under exposure of the landscape. The proper combination of these two negatives would produce a perfect result, and the method of carrying this out will be hereafter described.

Where proper attention is not given to this matter of perspective in clouds, the oddest effects are produced. Frequently the camera is pointed upwards in securing the cloud negatives, and, in consequence, the clouds immediately overhead are taken, and these are printed into an extensive landscape; and thus, instead of a glorious perspective of clouds gradually receding, but each cloud taking its proper place over the landscape—until in the extreme distance they lose form and melt in the horizon—a mass of clouds appears too strongly defined and completely wanting in perspective, producing anything but an agreeable impression on any one of taste who may happen to look at this most untrue and inartistic result.

Another equally grave fault is the use of clouds with the light on them in a totally different direction to that employed when taking the landscape. Ordinary observers may overlook these faults, but they are glaring defects to the cultured eye.

In many subjects where the sky forms only a small proportion of the picture, the clouds naturally do not play so important a part, and, therefore, so that they are suitable in form to help the general effect and break the monotony of a plain sky, enough has been done, and the printer has not been seriously tasked; but in an extensive landscape, or more particularly in a marine picture, the most perfect artistic skill will be needed to make a successful combination of clouds and subject. What, for instance, can be more offensive to any one of taste than to see the sparkle of sunlight here and there on rippling water and a sky so cloudy as to make the sun-lit water impossible? and yet there are examples of this anomaly in the present Exhibition. Enough has been said, however, to put the amateur who desires to make his photographic productions real works of art on his guard, and in looking out for the defects mentioned above in the various photographs that may from time to time come under his notice, he must inevitably strengthen his judgment and improve his taste.

We will now turn from the theoretical to the practical, and endeavour to show the amateur the best methods of printing-in clouds. At the outset it cannot be denied that a serious difficulty arises in at all times finding clouds suitable to the subject. It is necessary, therefore, to have a fairly-good

stock to select from. Should he be unsuccessful in making a number for himself, he will be able to procure waxed paper cloud negatives suitable for his purpose at the photographic dealers. Paper negatives have one advantage over those on glass. They can be printed from either side, so that for all morning or evening effects, when the sun is low, and the shadows in consequence long, by procuring cloud subjects taken under similar conditions, they can be used with the light from the right or left, according to the requirements of the case, always bearing in mind that morning and afternoon clouds vary considerably, and to take care, therefore, that there is harmony. Assuming, therefore, that a suitable negative has been selected, make a print from the landscape negative and lay the cloud negative over it, and hold both up to the light, and move the cloud negative about until it occupies the desired position over the landscape. Now make a mark in the margin on each side, both on the negative and print, exactly where the sky touches, to serve as a register mark. Now lay the marked print back on its own negative as nearly as possible in the correct position, and transfer the marks from the print to the sides of the negative. A slight lead-pencil-mark on the extreme edges of the negative will be sufficient for the purpose, the object being to know where exactly to place the cloud negative. Having ascertained that the pencil-mark is in the right place, scratch with a penknife exactly on the spot, so that it will show in the margin of the print. Now carefully, with a sharp pair of scissors, cut the sky out from the print, and, if the cloud negative is on glass, attach the landscape portion to the wrong side, taking care that the register marks correspond. If the cloud-negative is on paper, lightly fasten it on a piece of plain glass, and, in a similar manner, attach the cut-out landscape portion as above described.

All is now ready for the printing experiment. Put the landscape out to print in the ordinary way; but if the sky is weak, and prints through of a grey tint, a piece of cardboard, with the edge slightly curled upwards, may be laid over the printing frame, keeping it up slightly from the glass just where the horizon line comes. When the print is finished, lay it on a piece of glass, with the printed surface upwards, and on it the cloud negative. Make the points register—that is to say, take care that the cloud-negative occupies its proper place on the landscape-print. Cloud-negatives are usually very transparent, and should be printed in lightly, remembering what has been said above as to the unnatural effect of clouds too heavy for the landscape. It will be best not to leave the printing operation for a moment. The lower portion, near the horizon



does not require to be so dark as the rest, and the curved cardboard may be employed to soften the light, or it may be gently moved about during the printing operation. As the print cannot be looked at, a little judgment will be needed. Above all, be sure the clouds are light enough. Of course, a printing-frame can be employed, so that the print can be watched; but more skill is required in registering, and as the clouds are usually printed in so quickly, one or two trials will determine the depth of printing necessary. The cloud negatives taken at the same time as the landscapes, and on plates of the same size, will be found far the easier to manage, and the effect, if the printing be properly performed, cannot fail to be more natural and truthful. The object of placing the cut-out mask on the wrong side of the cloud negative is to prevent the possibility of any hard line showing over the distance. It will naturally be inferred from the above that it is far more difficult to introduce clouds successfully where the distance is very delicate than in a subject where there is strongly-marked contrast between the sky and foreground—as, for instance, over boldly-defined trees; but, with a little patience and a few failures, the determined amateur cannot fail in the end.

## THE PHOTOGRAPHY OF THE HEAVENS.



AS we have to use the same pair of eyes over again, the rapidity with which impressions fade out is an essential condition of the uninterrupted use of our eyes. Reading would be wearisome if it were necessary to wait, after turning over a page, for the impression of the former page to pass slowly from our eyes. The great rapidity with which the eye is able to present a *tabula rasa* to every new object is one of the most valuable of its powers. There is also the limitation of area. It is only when the images on the retina are very minute—and even then only by an unconscious movement of the eye—that we can see (as we suppose at once) a large range of objects. In all these points the photographic plate contrasts favourably with the eye, and is able to some extent to supplement it. By the choice of suitable substances, we can give to the plate the power of receiving the light which is invisible to the eye, because it lies beyond its range of power. The action of a feeble light upon the plate accumulates by lengthened exposure, so that a star's image too feeble to produce a sensible photographic effect in one second may be able to impress itself strongly on the plate in one minute, by the cumulative effect of the sixty successive seconds of action.

We shall see that, for the faintest stars which have been photographed, more than one hour's continuous action of the star's light has to be gathered up before a photographic image of sensible strength is obtained. A plate, unlike the retina, retains the impression of the light which has come upon it, and so may be said to possess a memory which is unfailing. The plate can treasure up for all time the most complex forms, or it may be the images of many thousand stars, which have once impressed themselves upon it. Again, by taking successive plates we can obtain a map of the whole heavens traced by the finger of light, on as large a scale as we may desire. With these great advantages are bound up necessarily certain drawbacks; the plate has "*les défauts de ses bonnes qualités*." In consequence of the cumulative action, the photographic picture is not true to nature. For example, in the case of the photograph of a nebula, the long exposure necessary to bring out the fainter portions causes the brighter parts be so much overdone as to be wanting in details, and any bright stars which may be present are no longer, as they should appear, small points, but have grown into large discs, which may overlap each other, and may conceal what is close about them. We have said already that photographic vision does not correspond with that of the eye. If ordinary gelatine plates are used, the violet light which is near the limit of the eye's power appears the most brilliant light to the plate, and the picture may not correspond with what we see, but represents a sun-spot, for example, as we should see it if our eyes were attuned to a higher octave of light waves. These drawbacks, and some other more subtle ones, are well understood, and, if taken carefully into consideration, need not detract much from the enormous advantage which photographic plates possess as a help to astronomical research. An almost limitless field of discovery lies before the astronomical photographer.—*Dr. Huggins, F.R.S., in "Cassell's Family Magazine."*

MR. A. DRESSER, honorary secretary of the Camera Club, has favoured us with the following comment upon a theory lately advanced in these columns concerning red and green fog. He writes: "In the CAMERA for October, on page 126, Dr. Johnson says, with respect to red and green fog, that they are caused by the fumes or imperfect combustion of gas. Now I, for one, cannot agree with him here, and think that Captain Abney and Mr. Burton give a much more acceptable solution of the problem. I have frequently found red and green fog upon plates developed in a dark room, where no gas was laid on, and where none was in the neighbourhood. Another thing which I have often remarked is that the unwelcome guest will be found on one plate only of a batch of twelve, each developed at the same time, in the same room."



## OUR FULL-PAGE ILLUSTRATION.



THE illustration which we offer to our readers this month differs materially from those which have gone before. It is not printed from a block, nor is it printed in a press of the ordinary kind, but is produced in printer's ink direct from a surface of gelatine. A few words concerning this most interesting process, which is not beyond the powers of a skilful amateur, will be welcome to many. The process is based upon the fact that a sensitive film, of which gelatine forms the structure, is capable of affording a picture in relief. Even the veriest tyro in photography will have noticed that his gelatine negatives, when looked at by reflected light and held in a slanting direction, exhibit the picture in relief, and this is best observed when the plates have been in the drying-rack long enough to remove the surface moisture. The unexposed portions of the plate are raised above those portions which have been acted upon by light, the reason being that the light and subsequent development have made certain portions less soluble than they were before, and less capable of swelling up by contact with water. This being understood, let us see how the principle can be applied to the production of a mechanical print like that which we insert in our present number.

A piece of plate-glass, after being finely ground on one side, is covered with a substratum of which silicate of soda generally forms a part, and is dried. A plate so prepared is then ready for its sensitive covering, which consists of a solution of gelatine, charged with a certain quantity of bichromate of ammonia, or potassium. Sufficient of this mixture is poured upon the plate to form a thick film, which is dried by heat in a proper drying-box, while the plate remains in a strictly horizontal position, and in darkness. The plate should be perfectly dry in two or three hours, when it is exposed to light under an ordinary negative. It is now washed in several changes of water for about one hour, during which time the unexposed portions of the film swell up, leaving the exposed portions as depressions, the relief obtained being far greater, owing to the thickness of the film, than in the case of an ordinary gelatine plate, as already adverted to. Next to the washing comes the drying, which is best done in the open air.

Now comes the actual printing, which is the most difficult part of the process. The plate is put upon the bed of a lithographic-press, film upwards. It is next damped with glycerine and water, and is rolled with a soft velvet, gelatine, or leather roller, or by each in turn, which has been charged with fine ink. A sheet of enamelled paper is now laid upon the inked film, the whole

is put under pressure, and the paper pulled off bearing the picture in indelible ink. It will thus be seen that the process is very nearly akin to the usual lithographic method of printing, for both processes depend upon certain portions of the subject being made repellent of the greasy ink. This collotype process is not new, for it has been practised for the past thirty years at least; but it has been greatly improved of late, and is now much employed for book illustrations and for the production of traders' illustrated catalogues.

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 "THE GLEANER."
 

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WE have received numerous letters of congratulation, which have been entirely unsolicited, and have come to us as a pleasant surprise, concerning the full-page illustration, entitled "The Gleaner," which appeared in our last issue. The opinions expressed in these letters will be as gratifying to Messrs. Lambert Weston & Son, of Folkestone, who took the original photograph, and who must therefore receive the highest meed of praise, as they will be to the Meisenbach Company, who reproduced the work with such wonderful fidelity. It must not be forgotten, too, that a great deal of credit is due to the printer; for, as we have more than once pointed out, these process-blocks are so fine in texture that they require the greatest care in the press. The letters have come from some of the first photographers of the day, one of whom offers to place any picture which he has taken at our disposal for similar reproduction—an offer which we shall not be slow to accept. Here are a few extracts from the letters referred to:—

"I am more than struck with the 'Gleaner,' in this month's CAMERA, and believe it to be by far the best thing that has been done in this direction."

"The last number is capital. The illustration is the best yet done in any photographic journal."

"It is very difficult to believe that your recent picture, 'the Gleaner,' is the product of a merely mechanical process. It is simply perfect."

"I was really charmed with the 'Gleaner,' and it takes a lot to produce that effect on such a censorious individual as I am. But the picture is good as a composition, and its face, instead of being one of those photographic faces—*i.e.*, uninteresting—is positively pretty. Messrs. Lambert Weston have a good model, to say the least."

"I beg to express my admiration of the lovely engraving, the 'Gleaner.' It is simply perfect: the subject, the attitude, the execution, the softness, everything is marvelously good. I have shown it to several people in our neighbourhood and the admiration has been general. Allow me to offer you my sincere congratulations for the enviable reputation which your paper enjoys after its brief existence of a few months."

We have received these opinions with very great satisfaction, and may add that we intend in the future to publish pictures which will quite equal, if they do not excel, the one so highly praised.



# THE CAMERA.

November 1. 1886.



*Permanent Photographic Print.*

*London Stereoscopic & Photographic Co., Limited.*

CROMER HALL, NORFOLK.







## ISOCHROMATIC PHOTOGRAPHY.



**A** SUB-COMMITTEE of the Franklin Institute, Pennsylvania, after carefully considering the process published by Mr. Ives, by which it becomes possible to photograph colours in their relative degree of light and shade as they impress the eye, have recommended the award of "The Scott Legacy Medal and Premium" to that gentleman. The following notes of the process, which accompany the report, will be read with interest by those of our readers who are inclined to experiment in this comparatively new direction :—

## PROCESS.

*Emulsion Used.*—Newton's collodio-bromide. Preferably ripe. Fresh is apt to fog. The rapidity of this emulsion is about one-third that of a bath plate in sunlight.

*Chlorophyll.*—That obtained from blue myrtle or common plaintain is preferred. That from the plaintain appears to be relatively more sensitive for red than that from myrtle, although the admixture of eosin seems to correct it.

Upon this occasion Mr. Ives used about equal parts of each, probably one ounce altogether, cut and digested in five ounces Atwood's ninety-five per cent. alcohol, on water bath for about fifteen minutes. Filtered and ready for use ; should be allowed to cool.

The plate having been coated with the collodio-bromide emulsion is allowed to set ; it is then flowed over five or six times with the alcoholic solution of chlorophyll and immersed in a dish of water, which seems to precipitate the chlorophyll in a very finely-divided condition upon the collodion, rendering thereby the plate very sensitive, which it is not if exposed without the immersion in water. That chlorophyll remains upon the plate is demonstrated by the fact that after coating a plate so treated with an alcoholic varnish, the last drippings are of a green colour. Fresh myrtle-leaves should be used, as the sensitising properties decrease with age.

*Eosin.*—About one drachm of a stock solution of eosin, blue shade, thirteen grains to the ounce, ninety-five per cent. alcohol, are added to three pints of water, giving a pale cherry-red colour to the same. The plate is immersed in this solution for about one minute, for the plain eosin plate, and *directly* after flowing with the chlorophyll in the chlorophyll-eosin plate, *without previous washing*, that the two colouring matters may be deposited together. It does not answer the purpose so well to add the eosin to the chlorophyll solution and then flow the plate. The yellow sensitiveness in the plain eosin plate may be somewhat increased by a slight action of silver nitrate, *but not where chlorophyll is present*. Free silver salt is destructive to chlorophyll sensitiveness. An excess of eosin slows a plate. It renders an emulsion sensitive to yellow and green, but not to red, and requires a darker shade of yellow screen for the best results.

*Screen.*—A solution of picric acid in a small tank, with sides of plate-glass : thickness about one-fourth

inch between glasses ; such was used in the following experiment. A more convenient screen is made by flowing a piece of plate-glass with gelatine, staining it with picric acid, and covering with glass, previously flowing with Canada balsam. Such may also be introduced between the combinations of a double lens.

*Development.*—Soda carbonate and soda sulphite with *dry* pyrogallic acid. The usual stock solutions of pyro, made with sulphurous acid, &c., should not be used. A little bromide is also added. All forms of these plates develop very quickly. Are likely to fog and may be intensified, but still give good prints. Fumes of  $H_2S$  are very destructive. A dark yellow-green glass gives the safest light for development of chlorophyll plates.

*Subjects.*—A lithograph containing red, blue, yellow, and green, in pure colours, and combinations thereof.

## FIRST EXPOSURE.

*Plate.*—Plain collodio-bromide emulsion. Time, one minute ; diffused light by window and under skylight. *No colour screen.* Developed quickly, about correct time.

## SECOND EXPOSURE.

*Plate.*—Plain collodio-bromide, *with colour screen*. Time, one minute ; in sunlight reflected from mirror. Developed. No trace of image. Entirely under-exposed.

## THIRD EXPOSURE.

*Plate.*—Chlorophyll. Time, seventy seconds ; reflected sunlight. Over-exposed. Yellow screen used.

## FOURTH EXPOSURE.

*Plate.*—Chlorophyll. Time, forty-five seconds ; reflected sunlight. Correct exposure. Screen used.

## FIFTH EXPOSURE.

*Plate.*—Eosin. Screen used. Time, forty-five seconds ; reflected sun. Correct exposure.

## SIXTH EXPOSURE.

*Plate.*—Eosin and chlorophyll. Screen used. Time, *fifteen seconds* : reflected sunlight. Exposure correct. Best negative of all.

*Comments.*—A chlorophyll plate exposed without a yellow screen would be full of detail, but the reds would be too dark and the blues too light. Mr. Ives claims to be the first to *prove* that the chlorophyll plate produces all colours in their correct relations. The first to prove blue myrtle chlorophyll to be the best of chlorophylls. The first to *combine* eosin and chlorophyll. The only one to give the process to the public. The relative values of the different sensitisers are demonstrated by the accompanying prints, and those of the spectrum. Their effect upon the length of exposure rendered necessary is shown by the list of exposures above given. In our opinion, say the witnesses named, Mr. Ives demonstrated with satisfactory results all that he claims for his process, which we believe to be an eminently useful one, and one which, with ordinary care and attention to the instructions, is by no means difficult to manipulate.



## THE PHOTOGRAPHIC EXHIBITION.



NO photographer, whether amateur or professional, should miss the opportunity of visiting this exhibition before November 13, when its doors will be closed until the autumn of 1887 again brings round the annual show of pictures. For this exhibition is organised by the parent society, and attracts to its walls the work of the best photographers in the kingdom, and is also contributed to by those of foreign countries, two of whom have succeeded in carrying away medals from their British competitors. To this exhibition, too, we look for a record of the progress in the art of photography made during the past year, not only as exemplified in the general improvement shown in the pictures, but also in the processes adopted for their production, and even in the apparatus by which the results exhibited have been achieved.

The increasing popularity of the art-science is at once proved by the large number of exhibits, which has necessitated the "skying" of several frames which we would fain have examined more closely. And we understand that the number rejected was greater than upon any former occasion. This can hardly be a subject for regret, for at exhibitions generally it is too often the case that good, bad, and indifferent works are catalogued without demur, so long as there is space upon the walls for their accommodation. Another circumstance upon which the Society may be congratulated is the absence of those frames of little portraits which have been far too plentiful in former years, and which seem to have been removed from the doorways of enterprising photographers for the purpose of the exhibition. But

portraiture is by no means forgotten; indeed, it may be said to constitute the chief charm of the gallery. The portraits shown are not of the stereotyped kind, but can more correctly be described as studies—and most beautiful studies some of them are.

With regard to processes, we find upon looking round the walls that the silver-print on albumenized paper is still the most common method of obtaining positives. But there are many examples of Platinotype—Eastman paper—and some other more lately-introduced media. Nor must we omit to mention that the Autotype Company contribute about twenty of their splendid large pictures in carbon. Mr. Dixon, of Albany-street,

whose animal pictures photographed in the "Zoo" carried off a well-earned medal in a former year, comes to the front now—not as a photographer, but as a process discoverer. In conjunction with Mr. Gray he has succeeded in producing some excellent orthochromatic plates, by which yellow and blue when photographed no longer appear as black and white, but are



Woodside in Winter. By F. Thurston.

represented in their true tone values, or as a worker in pencil or pen and ink would endeavour to portray them. The advantage of using such plates is evidenced by one frame in particular—where in the centre is shown the coloured original—while on one side of it is its portrait as taken by an ordinary dry plate, and on the other its likeness as translated by one of the new orthochromatic plates. The difference is remarkable, and it is interesting to study the pictures by the side of the negatives, which are also exhibited. Mr. Dixon exhibits, too, several photographs by his new process from well-known pictures, placing ordinary photographs of the same subject beside them. One of these pictures, Turner's "Temeraire Towed to her Last



Berth," is an especially difficult subject for ordinary photography, for all the wealth of the painter's palette has been expended in the sunset sky and its many-tinted surroundings. But, like the other pictures copied, this one has evidently had no difficulties for Mr. Dixon.

It is a matter both for wonder and regret that the various processes which have been brought to such perfection for producing blocks for the printing-press direct from photographs are in the exhibition conspicuous only by their absence. The very fine examples of photo-engraving exhibited by Messrs. Annan & Swan, of Glasgow, are of the photo-gravure kind, and are evidently produced from copper-plates, for they exhibit the plate-mark on their margins. Some of these are excellent examples of the manner in which a photograph can be made to resemble a fine copper-plate engraving in every respect, save that the patient toil of the worker is dispensed with. "The Duke and Duchess of Connaught," by this firm, and the Prince and "Princess Henry of Battenberg," are simply perfect. There is, too, a copy of an old painting of Robert Fulton, the engineer, which at first sight appears to be a fine steel engraving. Upon looking closely at the paper it is seen that not only the ridges of pigment have been faithfully reproduced, but even the texture of the canvas of the original painting. In this section of the exhibition the Autotype Company also deserve notice for their auto-gravures, which are presumably produced by the process invented by Mr. J. R. Sawyer, and which he described to the Photographic Society not long ago. We are glad to note that Mr. Dixon, Messrs. Annan & Swan, and the Autotype Company are each awarded a medal in recognition of the services which they have rendered to photography in their several ways.

Having thus briefly glanced at the evidences of progress exhibited in Pall Mall, so far as processes are concerned, we will now more minutely examine the great variety of photographs hung upon the walls, and will follow the order of the catalogue. Mr. W. E. Debenham's frame of portraits (No. 4) calls to mind at once the marvellous rapidity of gelatine plates, for these pictures were taken in a studio with drop-shutter exposures. They are portraits of children, and have that aspect of reality about them which is very difficult to secure, unless little ones are quite unconscious of the moment when the lens is uncapped. The next pictures which attract our attention are some fine landscapes, which should serve as a useful lesson to those who think that they must travel far away from the metropolis before they can obtain subjects worthy of their cameras. Here we have four excellent photographs, as well as beautiful pictures, taken in Battersea-park by Mr. Vernon Heath

(No. 12), while close to them (No. 13) are four similar pictures by the same artist, which have been taken not farther from London than Kew Gardens. There are dozens of amateurs who will take expensive trips to the Continent of many weeks' duration, and who will bring back a series of pictures not one of which will compare, as a composition, with these from Battersea Park.

How oft the young have wandered  
To distant lands away  
To find afar the fortune  
Within their homes that lay.

Mr. Vernon Heath also exhibits some good pictures of that Royal Holloway College which the irreverent have christened "The Pillories." Frames Nos. 19 and 20 bring us to the medal pictures of K. Brandel, of Warsaw, who has several other frames containing the same description of pictures scattered through the exhibition. Each frame contains fifty pictures, measuring each about 5 in. by 4 in., and they have been taken with a kind of detective camera invented by the photographer who produced them. It is a matter for regret that the instrument itself is not yet on view, for the results given by it are truly marvellous. The subjects seem to cover every phase of outdoor life, and the figures are evidently quite unconscious that they form a mark for the ubiquitous photographer. Here are busy marketing scenes. Here, again, a regiment of soldiers, with their horses prancing in those impossible attitudes only secured by the eye of the camera. Here is a funeral procession, and close by a group of worshippers are kneeling before a wayside shrine. Sportsmen shooting wild duck, scenes in the harvest-field, and other domestic subjects, make up a collection which is both unique and valuable. This detective camera is described in the catalogue as a "photo-revolver," and a picture is exhibited of the inventor using it. It appears to be a small box which is held up to the eye—so we presume that the operator can see the image at the moment he touches the exposing-trigger. This is most probably the secret of the success achieved. No. 26, "Fra Giovanni," is a frame containing three most excellent platinotype untouched studies. We were so struck with their fine quality that we felt some surprise that the judges had passed them over without recognition. But we soon found out the all-sufficient reason. The same contributor, Mr. H. W. Gridley, has for No. 146, "The good Flask," taken a medal. This last picture is the finest picture of the kind in the gallery. A merry old monk is pouring out a glass of wine—that is all. But the expression of the old man, and the careful attention to detail in every portion of the little picture, have made it a perfect gem. In No. 30, Messrs. West & Sons have taken a medal for their yacht studies, photo-



graphed from a small sailing-boat—an honour which they well deserve. With a glance of admiration at Mr. H. Mansfield's clever little picture of "A Clovelly Cottage," we come to another medal picture by Messrs. Byrne & Co. This is No. 38, the portrait of a young lady in Grecian dress, and a very beautiful picture it is. It is taken direct on a 20-in. by 16-in. plate, and is printed in platinotype. It is a pity that this and other pictures by the same artists are marred by a vague descriptive label as follows:—"Portrait taken direct from life, same size." Now, it is quite

understood that a picture taken direct means that it is not an enlargement from a small negative. No one needs telling that the picture is from life; but when told that it is from life, same size, he is apt to wonder whether the original model is a native of Lilliput. The work is so exquisite in quality that it seems a pity that attention is diverted from it by this vague superscription. No. 39 is a mountain-top study by "Jean Ville," and represents the Aiguille du Dru, with its wonderful banner of cloud. This picture is of more than ordinary interest, for it represents

one of those natural phenomena which in text-books of science are usually either described verbally or roughly indicated by a woodcut. Here we have the thing in reality, and we cannot help quoting what Professor Tyndali says about it:—

In connection with the formation of clouds by mountains, one particularly instructive effect may be here noticed. You frequently see a streamer of cloud many hundred yards in length drawn out from an Alpine peak. Its steadiness appears perfect, although a strong wind may be blowing at the same time over the mountain head. Why is the cloud not blown away? It *is* blown away; its permanence is only apparent. At one end it is incessantly dissolved, at the other end it is incessantly renewed: supply and consumption being thus equalised, the cloud appears as change-

less as the mountain to which it seems to cling. When the red sun of the evening shines upon these cloud-streamers, they resemble vast torches with their flames blown through the air.

There are altogether in the exhibition six frames of pictures contributed by "Jean Ville," and all represent mountain scenery. It is an open secret that this artist, an amateur, is a lady, and in criticising her beautiful work we must also give her credit for the hardships which each separate study must have cost her. Photography at an altitude of several thousand feet above the sea level was

almost impossible in the old days of wet collodion, but now, thanks to dry plates, and their recent modification in Eastman films, which "Jean Ville" has adopted with such success, the work is shorn of a good deal of its fatigue. Mr. Edward Brightman, of Bristol, who has in former years taken medals all over the kingdom for landscape work, comes before us this year as a depicter of character subjects. His "Never too late to mend" (No. 40), represents a cobbler who is examining the very old boot on a boy's foot, and is evidently doubtful whether the required



'Tis Never Too Late to Mend. By E. Brightman.

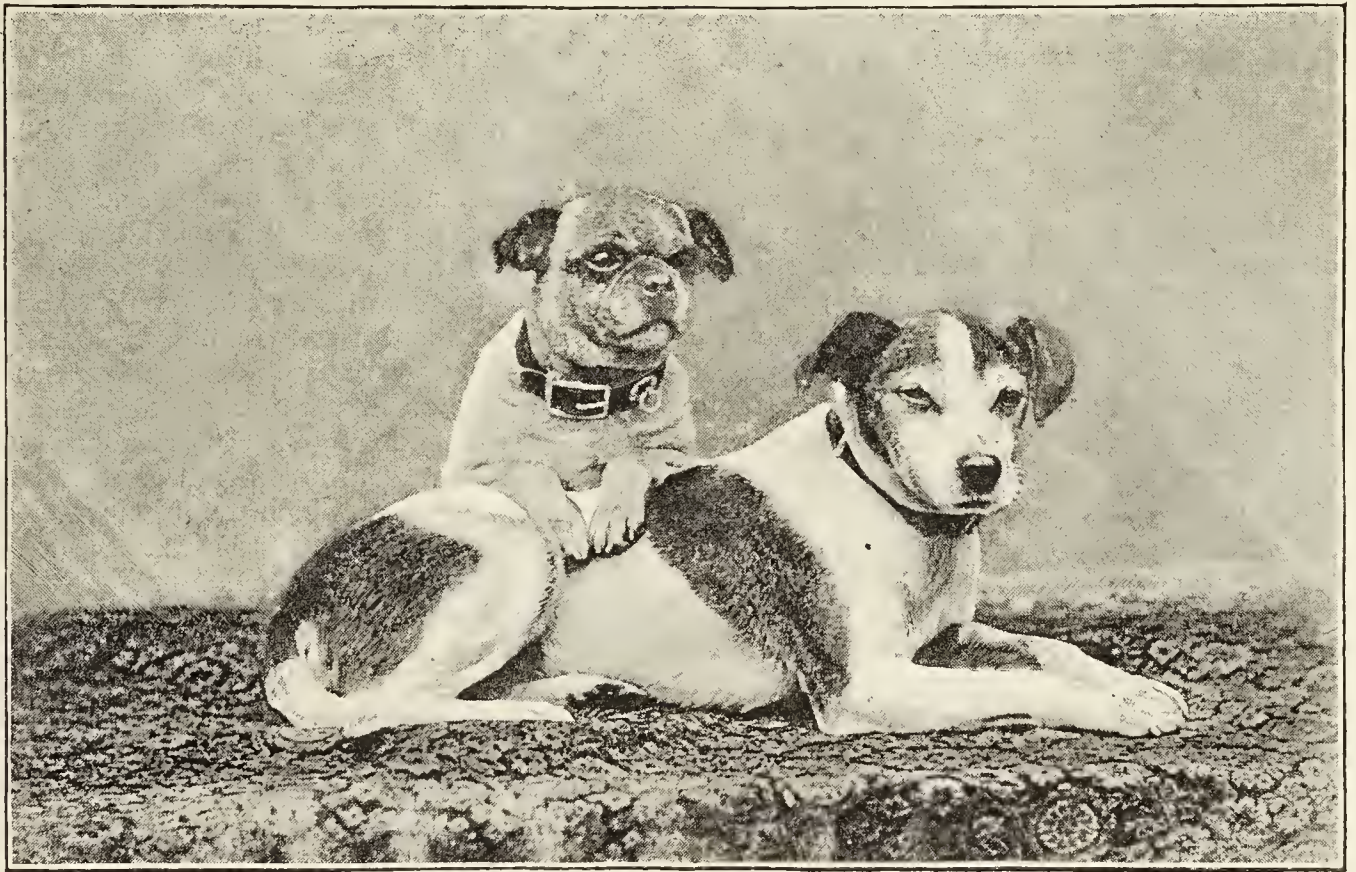
mending is not rather too late, after all. The picture is well composed, and the surroundings are admirable. In another picture the same cobbler is studying a newspaper. We may also notice here that two of the best interiors in the gallery are by the same hand—one being a picture of the choir and reredos of St. Mary, Redcliffe (No. 296), and the other a view of Christchurch. Nos. 47 and 48 are two very beautiful 24 in. pictures by Messrs. Morgan & Kidd, from paper negatives. Careful examination shows these productions to be quite free from grain and halation. We learn that the pictures were taken direct in a



large camera, fitted with a Steinheil lens, the paper being strained in an ordinary dark slide in a manner which we shall describe later on in connection with the apparatus shown at the exhibition.

Mr. G. P. Cartland, of Windsor, has won a well-deserved medal for his frame of dogs, photographed for her Majesty the Queen. These dogs—fox-terriers, collies, and pugs—seem to be in no way puffed up by their distinguished position. "That divinity which doth hedge a king" affects them not. They are simple and natural, and as ready for a bone as the meanest cur. What a lesson some of us can learn from our canine friends! The arctic character of last winter is reflected in

exhibition. Mr. F. W. Edwards takes a medal for a series of pictures taken from the beautiful terra-cotta sculptures by George Tinworth. These pictures are in platinotype, but printed with the fine Sepia tone now possible by that process. There is a pretty picture in this corner of the room (No. 79) which, from its smallness, is liable to be overlooked, especially as it is surrounded by very large works. It is called "Once upon a time," and represents a cottage interior, with a little child eagerly listening to its mother's story. The artist is Mr. Ralph W. Robinson. In frame No. 90, Mr. F. W. Broadhead exhibits a study direct from life, which has not been marred by the pencil of the retoucher.



Queen Victoria's Pets. By G. P. Cartland.

some beautiful landscapes by Mr. F. Thurston, the glistening snow being excellently rendered, and the points of view well selected. Mr. W. Wainwright's landscapes are always of the best, and his frame (No. 66) is quite up to his usual average. It contains some Scotch views, and a little gem taken at Midhurst, Sussex. In No. 73, Mr. R. Faulkner, who may be called the children's photographer, exhibits a carbon enlargement on opal of a photograph shown in another frame—"A happy child's prayer." It is a picture which, from its beautiful simplicity, immediately claims attention. Mr. Faulkner's frame of little dots, in every phase of undress uniform, also meets with great admiration, especially from the lady visitors to the

Close by is a picture of a rustic bridge (No. 91), by the Rev. H. B. Hare, who contributes many other works to the exhibition. The photographs are good, and are deserving of special notice, because they are executed on home-made plates. This gentleman, Mr. Matthew Whiting, and Mr. Henry Forsyth are the only three amateurs whose pictures are distinguished in the catalogue by the words "Plates own preparation," and we think that they are worthy honourable mention for that reason alone, apart from the excellence of the photographs which they show. Messrs. Gibson & Son, of Penzance, send a frame of gems (No. 95) from their picturesque neighbourhood—the two



pictures of "calms" being most noteworthy. The next frame contains three very fine woodland scenes from Ashstead Forest—the work of Mr. Walter R. Cassel. One of the finest landscapes in the room is "A Peep at Prebend's Bridge, Durham," by Mr. McLeish. The subject is a difficult one, the distant bridge being viewed through a tangled mass of wintry trees and underwood. It is one which few photographers would have attempted. We will conclude our present notice of the exhibition pictures by calling attention to the wonderfully fine series of six portraits (Nos. 1111 to 1116) by Fritz Eilender, of Cologne. These are of large size, and have been taken direct with Dalmeyer's No. 8 lens. No British photographer will grudge these fine pictures the medal which has been awarded them. We hope to continue our review of the exhibits in our next issue.

*(To be continued.)*

### APPARATUS.

THE astonishing impetus which has been given to photography of late years by the introduction of gelatine plates and films has been quickly followed by improvements in apparatus. The old box-like camera, which was good enough for the slow wet process, could not be trusted with the far more sensitive dry plates. Besides this, the ease with which the new plates can be manipulated speedily attracted a host of would-be workers to the art of photography, and generated the "amateur." As by far the greater number of amateurs use photography as an accompaniment to touring, cycling, and globe-trotting generally, manufacturers have vied with each other in producing apparatus which shall be strong and serviceable, and withal as nearly approaching the proverbial feather in lightness as possible.

In the exhibition catalogue more than one hundred entries appear under the section "Apparatus on the table," so that there is plenty to examine. Indeed, in one way, there is a little too much apparatus exhibited. We are inclined to think that an exhibition which is arranged and opened by the first photographic society in the kingdom should show only such apparatus as is of a novel character. But here we have plenty that might well be dispensed with, and which gives the room a shabby aspect, which is somewhat out of place; but there is much apparatus which is new, and some of a very interesting character.

We will not review the apparatus in any particular order, but will take in turn those items which we consider to merit special notice. One there is that claims attention to itself by its noise. It is an automatic rocker for a developing-dish, exhibited by S. D. McKellen. It is actuated by clockwork, and acts with efficiency and regularity;

but its noise is certainly objectionable, and would not conduce to the production of work which requires undivided attention to make it successful. Surely this drawback to an otherwise useful piece of apparatus can be obviated. Messrs. Shew also exhibit an apparatus fulfilling the same office, but which is quite different in design, requires no winding up, and is silent in action. The idea is certainly not a new one, for the motor—a heavy pendulum—has more than once been suggested as a rocker for the developing-dish; but we believe that this is the first time an apparatus on this principle has been produced commercially. The diagrams will help us to explain its various parts.

In Fig. I. A is an L-shaped piece of brass plate, which is screwed as a fixture to the developing-table, T, and which has on its vertical side a projecting rod about one inch in length, upon which is hung a heavy pendulum. Upon its upper part this pendulum is fitted with a brass face-plate, J, which is provided with a shelf which rests upon the before-mentioned projection, and which also bears at the right-hand side a small wheel, which is free to turn upon the pin at its centre. Also upon the table are screwed two little plates of brass of the shape shown at Fig. II., each with a depression in its centre. These depressions receive two iron points, like those on cricketing-shoes, which are fastened to the rocking-board, H (Fig. I.). This board has a projecting piece of brass, bent into a step-like form, which the little wheel on the pendulum top, J, just touches. The entire arrangement is shown in section at Fig. III. The pendulum is about thirty inches in length, and has an iron bob, K, which weighs about four pounds. When set in motion it will, of course, continue to swing for several minutes, during the whole of which time a developing-dish laid on the rocker, H, partakes of its movement. The apparatus will be found particularly valuable in developing the large plates now so commonly used, and which, without some such help, very quickly tire the arms of the operator.

There are several new instantaneous shutters which show marked improvement on previous patterns. It is really wonderful that any new thing is possible in this particular direction, for one would think that in the multitude already existing all ideas had been used up. One of the newest in design is exhibited by Messrs. W. Watson & Son, of Holborn, of which we append a sketch.

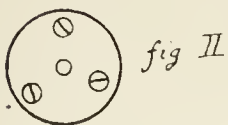
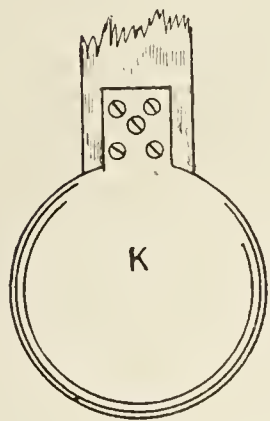
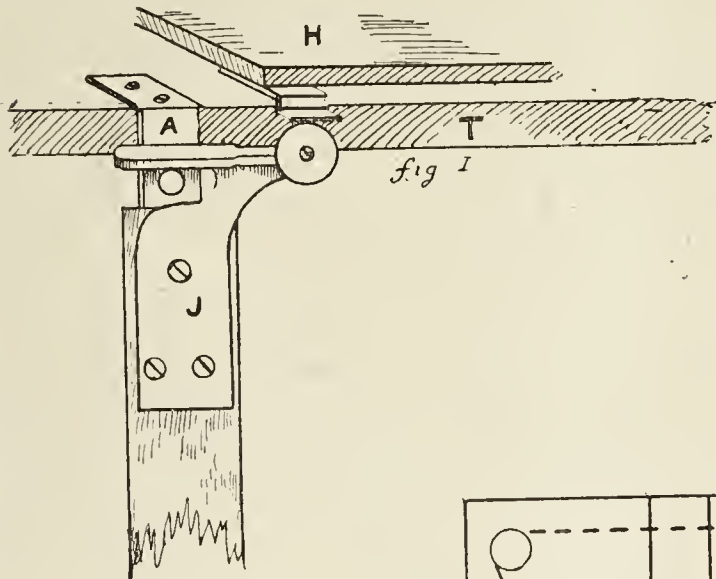
This shutter consists of an ebonite bed-plate, which fits upon the hood of the camera lens in the usual manner, the position of the lens being indicated by the dotted circle. Upon the upper part of the bed-plate are two parallel pieces of brass, *b b*, and between these slides another piece, A, to which are connected, by means of arms, the two ebonite wings, *w w*. The shutter owes its motion



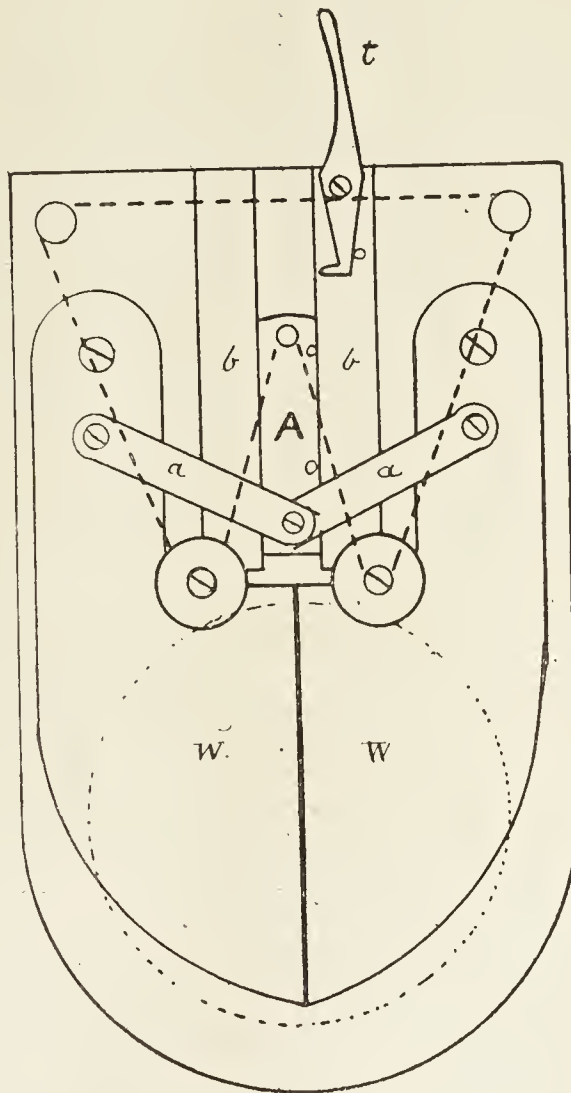
to a strong elastic band, which is placed over raised knobs, and which takes the course shown in the diagram by the thick dotted lines. To open the shutter for focussing, A is raised until the trigger-catch, *t*, can grasp a small projecting pin on A. This movement causes the wings, *ww*, to separate and reveal the lens-opening behind them.

shaped tongue, which fits into a corresponding groove in its fellow, so that their junction is perfectly light-tight. It will be seen, too, that the movement of one wing is exactly balanced by the movement of the other, so that there is no jar or strain upon the camera to which the contrivance is affixed. The shutter is well made, is small and compact, and is of light weight.

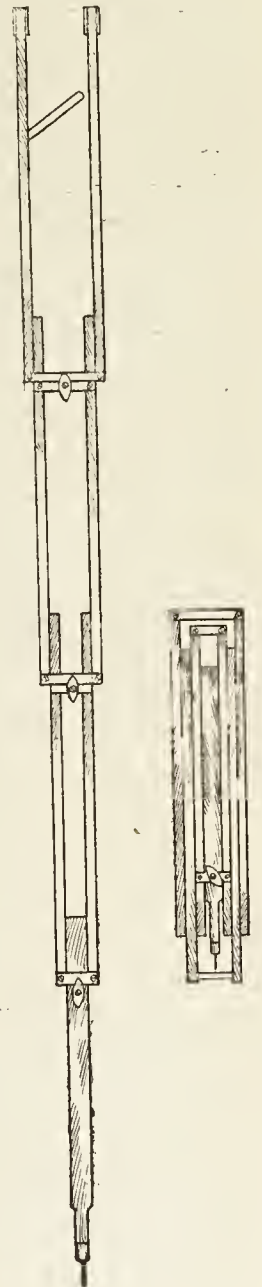
Messrs. Watson also exhibit a stand, to which we devote a sketch, showing the structure of one of its legs. This sketch requires little explanation. Each leg folds up into a length of sixteen inches—the total weight of the stand being only 2 lb. It has been designed more especially



Shew's Automatic Rocker.



Watson's Shutter.



Watson's Cyclists' Tripod.

Then, by raising the sliding piece, A, still more, and until the catch, *t*, can grasp the lower projecting pin on A, the wings, *ww*, again come together, and the shutter is closed ready for exposure. A touch of the trigger reverses all the movements just described, and a very rapid exposure is the result. We should mention that the edge of one wing is furnished with a V-

for the use of cyclists—to whom the carriage of a tripod of the usual length is a grave inconvenience; but we think that it will be considered a boon by tourists generally, for it will pack easily into a small portmanteau, and without taking up much room. A sketch of the leg when folded up for travelling is appended. We must reserve a notice of other apparatus until next month.



## THE PERMANENCE OF WATER-COLOURS.

(Continued from page 133.)



BLUES may next come under consideration. Of these we have Prussian blue, Antwerp blue, indigo, ultramarine, cobalt, and smalt. Certain "permanent blues" are also in the market, but, as we do not know their composition, we will pass them by. In our boyish days we innocently thought that Prussian blue had some vague reference to the battle of Waterloo; but it really takes its name from the ferrocyanide of potassium, the old name for which is prussiate of potash. Here, again, a simple experiment will teach us how it is prepared commercially, the chemicals being ready to hand in every photographer's laboratory. Mix separate solutions of yellow prussiate of potash and protosulphate of iron. Upon mingling these two solutions together, there will be thrown down a dirty grey-blue precipitate of a flocculent character. To this blue precipitate add a few drops of sulphuric acid, and immediately afterwards pour in some very dilute bichromate of potash in water. Immediately the dirty colour will give place to a deep, rich blue, which, when washed and dried, represents the Prussian blue of commerce. The colour is permanent, and one of the most useful which the water-colour artist has at his command. Admixture with yellows and reds will give a fine range of tints for foliage. A slight modification in the manufacture of Prussian blue will change it to Antwerp blue. This colour is a useful one, and is valued by scene-painters because it does not, like some blues, look green by gaslight.

Next we come to that famous and lovely colour which has earned the poetical name of ultramarine. The real ultramarine is "without doubt," says Mr. Streeter in "Precious Stones and Gems," "the sapphire of the ancients—a blue stone (*Lapis Lazuli*) which Theophrastus describes as spotted with gold dust, while Pliny speaks of it as being like to the serene blue heavens, fretted with golden fire. The 'gold' mentioned by these and other ancient authors refers to the spangles of brass-like iron-pyrites, which are commonly dispersed through the rich blue substance of the stone." This colour is quoted in the price-list of an eminent dealer at 21s. per cake, so that we may suppose that its occurrence in nature is somewhat rare. To reduce the stone to the form of a pigment, it is broken into pieces, heated, and plunged into vinegar. This treatment splits it up into a powdery form, and at the same time gets rid of the chalk which is always associated with it in nature. But we venture to say that few artists employ the real

ultramarine, now that it is so closely imitated by the artificial variety, which is almost identical with it, even in chemical composition.

Indigo is a safe colour to use, although it is of vegetable origin. It is prepared abroad from the dried leaves of the plants which yield it. Indigo culture represents an important industry, which was seriously threatened a few years back by its synthetic production in this country by Roscoe. But it was afterwards proved that this latter production, although a remarkable chemical achievement, was too costly in practice to rival in the market the natural indigo.

Cobalt, made by precipitating a salt of that metal with alumina, is a very safe and beautiful colour. And smalt is a glass which owes its colour to the same source.

In considering the different red pigments at the artist's disposal, let us first take the lakes. The colouring matter of these is of vegetable and animal origin, the more inferior kinds being made from Brazil wood, and the better specimens (including the carmines) from the dried bodies of the cochineal, an insect which infests the cactus plants of Mexico. The range of tints procurable from these materials is remarkable, and it is a matter for regret that they are all of a most fugitive character, and must be avoided for works which are desired to be "joys for ever," as well as "things of beauty." Lake can be made by adding to a solution of cochineal some alum. After being warmed, the colouring matter is thrown down and can be collected and washed. Carmine is prepared in much the same way, but it contains a far greater amount of colouring matter. It is to the madders that the artist must look for permanence. These are prepared from the root of *Rubia tinctorum*, which for many centuries has been used as a valuable dye-stuff. The madder is prepared from the root with alum, in much the same way as the lakes are produced. Alumina is much used as a mordant by dyers, because it has the property of uniting with various colouring matters and fixing them, so that they become "fast," as the drapers say.

The earthy, and therefore cheap, reds—such as "Venetian Red," "Light Red," &c.—owe their colour to oxide of iron or rust. A simple experiment with the familiar green crystals of sulphate of iron will show how the colour is produced. Heat the crystals on an iron plate over a Bunsen burner, when they will first turn yellow and finally red. If, again, this red oxide be heated to a white heat, it will assume the purplish tint of "Indian Red"—a colour which owes its name to the circumstance that it is found native in our great Eastern dependency. Light red is made by calcining yellow ochre, the colour of which latter is also due to oxide of iron. This colour we did not consider



with the other yellows, because of its close connection with the reds. The permanence of all these tints, which owe their virtue to oxide of iron, is quite above suspicion.

Raw sienna; although a yellow, we also class among the reds, because its colour is due to an oxide of iron. Burnt sienna is, as its name implies, a calcined raw sienna. Both colours are most useful and thoroughly reliable. Raw and burnt umber have the same relations to one another. These are also earths, containing oxide of iron, and are thoroughly permanent. The different tones which these earths contain is brought about by the varying quantities of silica and alumina with which they are naturally associated.

Sepia is unique among the colours in being found as the natural product of an animal. It is obtained from the ink-bag of the cuttle-fish. Those who have ever fished in a sea in which these creatures are common, as on the coast of Cornwall, will remember that when one is hooked he is always held over the side of the boat until he has expelled the contents of this ink-bag, otherwise he will most surely squirt it all over the person of his captor. It is the means of defence provided by nature for this strange creature, who, on the approach of an enemy, will expel sufficient ink in the water to surround himself with a black, impenetrable cloud. The sepia is prepared by quickly drying the ink before it has time to putrefy. We most of us can refer to old sepia drawings, which at one time were very fashionable, and which tell us conclusively that the pigment is of a very permanent nature.

Indian ink being a preparation of carbon, is, of course, quite permanent. Photographers may be reminded that it can be rendered insoluble by the addition of a very small quantity of bichromate of potash in the water with which it is mixed. Treated thus, and exposed to light, the lines formed with it can be washed over with other colours without being disturbed.

## PICTURE-FRAMES AND PICTURE-SHOWS.



AMONG the minor evils for which the Royal Academy is responsible is the commonplace, inartistic character of English picture-frames. That royal body, in its wisdom, made a law that none but gilt frames were to be hung upon its walls, and most of the other exhibitions, with dutiful docility, also incorporated this golden rule into their statutes. Hence, from Piccadilly to Dublin, we have nothing but gilt mouldings and gilt flats, gilt flats and gilt mouldings, varied by an occasional Watts frame. This latter, by

the way, is an excellent proof of how little originality has been displayed in frame-making when so little has gone so far. The argument used by the champion of the common domestic gilt frame is that variation from it would hurt the symmetry of the exhibition, and that some frames might hurt contiguous pictures by their colour or conspicuousness, and so pictures are condemned oftentimes to hurt themselves by a frame which may by its glitter and tone detract ten per cent. from the effect. Besides, if the argument were true, it should be remembered that even the Royal Academy is not the ultimate goal of a picture; some, not many, perhaps, just now—but some pictures are bought, and it is the duty of a painter to consider the possible buyer by producing a piece of decoration wholly beautiful and harmonious, rather than to sacrifice his instincts for the sake of the chance associates of a month or so. But it is not true that a variety of frames would hurt an exhibition, any more than does a variety of pictures, or half as much as some of the prismatic canvases that decorate Burlington House. No artist worthy of the name would care to make his frame more conspicuous than his picture; hence, if the picture is admissible, why not the frame? as, naturally, the same right of refusal over the picture would extend to the frame, whose character and material should, as in all art matters, be a question of taste, and not of law.

The fact is, that a rule of thumb is the only one by which hanging committees go, and in many cases it might as well be done by the carpenters—members on the line, large important works in centre or place of honour, rest as symmetrical as possible, a long picture to balance a long picture, a tall one to balance a tall one, and so on—filling in with small fry. Symmetry is the Alpha and Omega of your hanging committee, and the consequence is that pictures are forcibly placed in positions unsuited to them, just to fulfil this dull rule; and to this, in great measure, may be traced the hopeless monotony of the British frame itself. What could the hangers put opposite a frame of some originality? Not another original frame, for that would not be symmetrical; and so it was thought better to have them all gilt, and to tacitly discountenance all variation from a few well-accepted models.

Let us picture to ourselves how a Japanese artist would set to work to design a frame—would he not ponder how best the tone and character of his picture would be helped by the tone and character of its frame? Then, would he not seek inspiration from the woods and streams, and work beautiful suggestions of his imperial chrysanthemum, of his conical fire-mountain, of his “sunward sailing cranes,” of hundreds to us unutilised decorative creatures and plants? And these he would work out, not in the eternal putty mouldings and German gilding, but in bronzes, in lacquers, in stained ivories, in precious inlaid and carved woods, and in countless ingenious combinations, not only beautiful in themselves, but adding beauty to the picture. In this spirit Michetti, the exquisite artist of the Abruzzi country, having painted a charming picture called “Printemps et l’Amour,” in which nude children, apple-blossoms, and a blue sea floated in sweet spring sunlight, contrived for it a frame of rusty iron, in which grasses and lizards, &c., helped the fancy of the picture with their suggestive-



ness, while the sombre richness of the old iron gave point to the brilliant sparking sunlight.

Some few exhibitions are awakening to the necessity of reform in the matter of frame-making; the Society of British Artists, for example, are, I believe, opening their doors to a variety of frames, as also the New English Art Club; but up to this date any suggestion of novelty in frame-making has been met by the gloomy response, "What is the use? None of the exhibitions would receive it."—*Pall Mall Gazette*.

## Reviews.

*Photo-Engraving on Zinc and Copper in Line and Half-Tone, and Photo-Lithography.* By W. T. WILKINSON. (Messrs. England Brothers.)



HIS book is a very useful contribution to the photographic worker's library, for although it covers some ground which has been traversed before by other writers, it also contains much original matter. The work commences with a lucid description of the collodion process, and of the necessary manipulations required in obtaining reversed negatives in the copying camera. Then follows a practical account of the zinc process for the reproduction of subjects in line or dot. This brings us to Chapter VI., which is the most important and interesting of all, for it tells the reader how pictures in half-tone, such as ordinary silver paper prints, can be produced as blocks ready for the printing-press, without the intervention of the engraver. "This is done by interposing a screen either before the sensitive plate in the dark slide of camera (when copying a photograph direct), or placing the screen behind a transparency on glass when transmitted light is used. In the first instance, the image projected upon the sensitive plate having first to pass through the screen, is broken up by the dots upon the screen, the result being a definite framed negative. In the second instance, the screen being placed between the light and the negative, a similar result follows." The screens are made by taking very perfect negative images on glass from paper which has been ruled with parallel lines by machinery. It is a pity that these lined screens, with varying degrees of coarseness so as to suit different subjects, do not form the subject of an illustration. It is difficult for the tyro to learn, from mere verbal description, what the author intends to convey to him. A few pictures and diagrams would make this all clear. Another thing which would improve the next edition of the work—and we think so well of it that we feel convinced it will have a next edition—is the insertion of blocks, illustrating the various processes described. These illustrations would at once show the value of the process in question, and would demonstrate its superiority, or the reverse, when compared with others. Not the least valuable portion of the book is its voluminous Appendix, in which are reprinted many articles upon the subject of "processes" which have appeared in our contemporaries, the *British Journal of Photography* and the *Photographic News*. To the Editors, past and present, of these publications Mr. Wilkinson dedicates his work.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

—o—

A. G. H.—1. We will forward the first part of your letter to Germany, where the writer of the article to which you refer is residing. 2. We have certainly never heard that a mark on the glass of a lens can be considered a sign of good quality. Such a mark as you describe is not likely to detract from its performance, any more than a small bubble will. But it represents a flaw, which would probably affect the selling value of the lens. 3. Zinc dishes can be used for ordinary development, but not for fixing. HCl will, of course, act in the way you anticipate. To be quite safe, heat the zinc dishes on the hob, and paint them inside and out with Brunswick black—to be obtained at any oil-shop.

A. H. D.—1. The picture which you send has the appearance of having been printed from a very thin negative. Kindly say whether this is the case, and we will endeavour to put you right. Its back, too, is covered with stains, as if it had been laid upon a table soiled with chemicals. 2. Try the soda solution once more, but adhere more rigidly to the formula recommended. 3. Ruby light is correct. In printing in the sky negative, shield the rest of the picture, and expose to gaslight for ten seconds at about one foot from flame. Sacrifice a sheet cut into strips, and exposed for various times. It will save you much in the end.

H. L.—Your letter is long, and discusses a question of very limited interest. We cannot, therefore, find room for it.

AMATEUR.—You will see by our present issue that your wishes have been anticipated. Moreover, it is our intention to follow out nearly the same course as that which you have sketched out. Thank you for your kind remarks, and your endeavours to make the magazine known.

A. TEBBUTT.—An article upon the subject your name is now in print, and will appear in our next issue. It will give full particulars of the process. In the meantime you might get what you want from Morgan & Kidd, Kewfoot-road, Richmond; and possibly from Marion & Co., Soho-square.

CECIL.—We consider that the silver print which you send, and which you tell us is toned without gold, is a very creditable production indeed. We shall be glad to know particulars of your process, unless you have determined on keeping the matter secret.

G. DAVISON (Camera Club).—Too late for last month, or would have been most happy to insert the matter sent.

T. J. O'CONNOR.—Your kind suggestions shall meet with attention in due time, under the heading of "Hints to Beginners."

REIGATE.—If you double, treble, or quadruple the quantity of water so as to suit larger plates, you must also do the same with each of the other constituents of the developer.



# ✻ THE CAMERA ✻

A Monthly Magazine for those who practise Photography.

EDITED BY T. C. HEPWORTH.

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## Sayings and Doings.



SOME half-dozen years ago, when our photographers first became alive to the advantages of using gelatine plates, there appeared in the various journals articles from many workers with the title, "*Collodion versus Gelatine*," in which arguments for and against both methods were freely discussed. Gelatine eventually won the day, and the advocates of the wet plate had to hold their peace. They acknowledged that gelatine was wonderfully quick and convenient, but said that the negatives produced by the new process were deficient in that sparkle and "pluck" which they had been accustomed to look for, and which they could obtain at will from the wet collodion method. Things have progressed very much since that time, and much better dry plates are now at the photographer's disposal, but was there not some truth in that statement about want of sparkle?

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WE are led to ask this question for the following reason. We have just had the opportunity of looking over a series of 12 by 10 prints, taken in various parts of India twenty years ago by Mr. S. Bourne (Messrs. Bourne & Shepherd). These are among the very finest products of the camera that we have ever seen, and they are as bright and good to-day as they were on the day they were printed. The foliage shows a marvellous crispness and elaboration of detail in the shadows, which are certainly seldom seen in a print from a gelatine negative. The clear, bright light of India has, of course, something to do with this, but at the same time we have seen many modern Indian

photographs in which those particular qualities are altogether wanting.

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IN only one point did we fancy that these pictures from collodion negatives were found wanting. In the various snow scenes taken many thousands of feet above the sea in the fastnesses of the Himalayas, the pure white mantle which covers mountains, trees, rocks, and everything seemed, when compared to gelatine work of the same kind, to be deficient in variety of tone. It lacked that silvery softness which a gelatine plate will register with such marvellous fidelity. This is no doubt due to the greater opacity of the collodion film, a quality which gives, however, that peculiar force to the points of light on foliage to which we have just adverted. It is this same opacity, too, which gives to a collodion lantern slide, when seen on the screen, a want of transparency when compared with a gelatine picture.

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WE had the pleasure of attending a lantern lecture, the other night, by the Rev. Dr. Tremlett, the Vicar of St. Peter's, Belsize-square. The title of the lecture was "*Our Holiday in Spain*," and it was profusely illustrated by some capital views taken by the lecturer, the best of which were those of the Alhambra and its vicinity. Dr. Tremlett seems to have had much trouble in the way of passing his luggage through those various barriers which in some countries seem to be set up on purpose to disgust tourists. His advice to intending travellers to Spain is certainly calculated to put an end to all difficulties. "If," said he, "you want to visit the country comfortably, drop all your luggage overboard before you land; or, better still, travel without any camera or luggage at all."



In order to avoid unkind remarks from your friends you may as well start with a portmanteau of respectable appearance; but leave it at the station in London, and call for it again when you get home."

+ + +

THE Photographic Convention will meet next year at Glasgow as previously arranged, but the date of meeting has been altered from July 11th to July 4th. This alteration, we understand, is in deference to a wish expressed by the Glasgow Photographic Society.

+ + +

MESSRS. NEWTON & CO., of Fleet-street, have introduced a new microscopic attachment to the lime-light lantern. It is a simple arrangement, containing a condenser, a stage for holding an ordinary microscopic object, and a support for the objective. By this instrument very large images of ordinary microscopic preparations can be projected on to a screen, without the care and trouble involved in using a special form of lantern microscope for the purpose. By the addition of a prism, the image can be thrown directly down upon a sheet of paper, so that the object can be traced thereon by the pencil. It is also needless to point out that a gelatino-bromide paper might receive the image for subsequent development.

+ + +

MR. JOHN CARBUTT, of New York, we learn from the *Philadelphia Photographer*, has hit upon the happy idea of coating plates of ground glass with transparent emulsion, for window decoration. This method overcomes the trouble of furnishing such a transparency with any kind of backing. Our readers will doubtless take a hint from this new and easy method of producing the most charming form of photographic work. Those who are able to coat their own plates can be made happy at once; and we feel sure that directly such plates come to be asked for, dealers will promptly meet the demand.

+ + +

WE have received a packet of very beautiful Christmas cards, the joint production of Messrs. Hildesheimer & Faulkner. They are children's portraits taken by the latter well-known photographer, and reproduced in colour upon stone. They make beautiful little pictures—but, from an artistic point of view, we prefer the original product of the negative. In the transference to stone the artists who have been entrusted with the work have infused into it a little of their own notions of childish beauty. Mr. Faulkner's productions need no such assistance.

## NOTES FROM NEW YORK.

BY DR. EDWARD L. WILSON.



THE holiday season is ended, and amateur and adept are employed vigorously, preparing for the winter's work.

The newly-made plates are about all developed, and a good deal of printing has been done during the two weeks of lovely weather brought in to us with the autumnal tints of October. All over the country, except, perhaps, in poor Charleston and at doomed Sabine, the aspect of affairs photographic is cheerful. I learn that several photographers have concluded to raise their prices; combinations have been formed in some of our cities bound to maintain living rates, and some are "on the fence" as to what they ought to do. At all events, there seems to be a determination to get above the miserably low club-rates for pictures which have ruled here for some years.

Another cheerful sign is that a number of new studios have been erected and furnished elaborately, while others are building. In fact, I believe photography is on the rise. And why should it *not* be, when it is becoming each week more and more the useful helper; when it is able to reveal the motions of the stars and the movements of the living heart with equal ease and exactitude?

In the practice of our art, too, it is marvellous what growth and improvements we in our day are privileged to witness and to profit by.

Among others, I have watched with much interest for the coming into the market of the Woodbury film. The very last letter which I received from an old and useful friend contained some bits of his film, and he wrote in most sanguine terms of what he hoped to accomplish with his new discovery. Now, it seems, this film is going to erect a monument in his honour, which will make his worthy name more enduring than ever. So mote it be.

Two curiosities have come to my office-table recently. The first was some prints from some old tannin plates, prepared nineteen years ago by Mr. Charles Wager Hull's formula, and exposed only a few days ago. The quality? Just as good as if they had been exposed ere they became "dry." There are the same old familiar opaque spots, however, and the hard contrasts of black and white. But can anybody over-time these plates, resurrected by an old-time photographer, who traded his studio in Vermont for an orange-grove in Florida, nearly twenty years ago, and who, just recently, was seized with a desire to come back to us?

The other curiosity was a dentist, who, despite



the desire of the world to compare the work of the face-maker to the face-acher, is an amateur photographer. He gave me satisfactory proofs that negative developing yields as different results as taking plaster casts of people's gums, and that as much brains is needed to secure satisfaction with the one as with the other. I have no doubt but what he is right, and therefore do not hesitate to give you a little idea or two which come to me from a master of music and a methodical amateur. He says:—

"Local reduction is done by chemicals, which, being in solution, it is very difficult to keep from overflowing upon parts not to be reduced; and very often more mischief than benefit is the result.

"I have often tried, with good effect, simply grinding the two dense parts, after drying the plate, with some soft grinding powder, such, for instance, as that used to "matt" varnished negatives for retouching. With some patience the most obstinate parts may be subdued to good printing condition. Wipe away the grinding powder when it has become dark, and use fresh.

"Some negatives when developed in a too-often-used developer will show a dark deposit after drying. This is certainly a fault, but one which can be turned to advantage. Here the two intense spots can be cleared and cleaned by an often-renewed tuft of cotton—dry, of course, as all these suggestions are.

"I have read with much interest the criticisms on exhibits at your Society Exhibition in Pall Mall.

"As with us, so with you, seemingly, the photographer grows excellent technically more rapidly than he does æsthetically. In his public exhibits, at least, this should not be so apparent. Query, would it not be better for him to exhibit only two, or four, or six of his *great* pictures instead of so many of his average ones? On that plan the painter works—why not the photographer?

## PRINTING ON PORCELAIN.

BY WALTER E. WOODBURY.



IF all the photographic printing processes, none can rival in charm and beauty the effects that can be secured upon porcelain plates. If "pot opal" be used instead of the flashed opal, a delicate softness and transparence can be obtained, captivating every beholder. The reason of this is an optical one, which does not operate the same as with flashed glass, where the opal colour is superimposed as a top layer, upon a plate of ordinary transparent glass. Notwithstanding, however, the excellence of porcelain prints, they have, for some

reason or other, never come into such general use as their merits would lead one to expect. Some consider that the reason of this is because they are apt to fade very quickly. This will be found in nearly every case to result from careless manipulation and insufficient fixing or final washing.

Again, a photographer has hitherto been compelled to prepare each plate himself as he required it; and it is a recognised fact, that nothing is more difficult than to get a photographer to step aside from the regular routine of his daily duty.

It is, therefore, with pleasure we observe that opal or porcelain plates have now advanced in this country to the same stage as gelatine dry plates for negatives, in the sense of their being now regularly manufactured and kept for sale by almost all the stock dealers.

The advantages of this to both the professional and the amateur cannot be over-estimated. In the case of the former he will now be placed in a position to solicit orders for this fascinating picture, and the amateur has now opened up to him a new channel of pleasure and enjoyment for himself and friends. With a little care and attentive study of the following directions for printing on porcelain, he will be able to obtain pictures possessing marvellous strength, beauty of tone, and permanency. By inserting one of these in a miniature or other suitable case he renders it fit for presentation to an esteemed friend, be he or she never so fastidious in matters artistic.

The foundation of porcelain printing depends much upon the kind of plates used. For plain prints or those that will be afterwards tinted, plates with a polished surface should be used; while for fine artistic finish in colour or monochrome, those with ground surfaces produce the desired result. It is also essential that they should be perfectly flat. To determine this, hold the plates up a few inches from the eyes, and look along the edges both ways. If the plate appears uneven or wavy, reject it. Porcelain plates that are ground are always flat enough. These can also be easily obtained, or can be prepared from ordinary porcelain plates with a little trouble. Select for this purpose plates that are already as nearly flat as possible. The best plan is to grind two together. This is effected by fixing one plate firmly on to a table or piece of inch pine by means of a few tacks round the sides; care must be taken, however, that the heads of the tacks do not project so high as the surface of the plate.

Now place upon the surface a quantity of coarse emery powder, and moisten it well with water. Then place the second plate upon it, and move it about backwards and forwards from end to end, and from side to side. Keep the surfaces well supplied with emery and water, and use plenty of muscular power. As soon as the surfaces are



ground quite flat—that is, when they will lie on each other in perfect apposition—wash off the coarse emery and use the finest that can be procured. By this means you get perfectly flat plates, and if they are printed upon from a negative made upon plate or equally flat glass, a perfectly-sharp image can be obtained. The porcelain plates must now be cleaned by washing thoroughly on both sides, and afterwards placed in a 25 per cent. solution of nitric acid, where they must be allowed to remain for a few hours; they are then again washed thoroughly, and when dry wiped with a piece of flannel dipped in alcohol, and afterwards well dried with flannel.

Before coating with the sensitive collodion, many operators coat the plates with albumen, but it will be found just as good a plan, and far simpler, to coat round the edges only, to the depth of about an eighth of an inch, with a strong solution of albumen. If this is omitted great care is required, in the subsequent toning, fixing, and washing operations, in order to prevent the collodion film from detaching itself from the porcelain plate.

The preparation of the collodion next claims our attention.

Plain collodion is made with equal parts of ether and alcohol, to which is added 2 per cent. of any easily soluble or high temperature pyroxyline. The thinner the collodion the easier it is to obtain an even coating, which is absolutely necessary. The following three solutions are now to be carefully prepared:—

#### A. SILVER SOLUTION.

Water .....	2 drachms.
Silver nitrate .....	100 grains.
Alcohol .....	4 drachms.
(to be added slowly).	

#### B. CITRIC-ACID SOLUTION.

Alcohol .....	1 ounce.
Citric-acid .....	25 grains.

#### C. CHLORIDE SOLUTION.

Alcohol .....	1 ounce.
Chloride of strontium.....	25 grains.

When all are dissolved the citric acid is added to the chloride of strontium solution, and the solution formed is mixed very slowly with one ounce of the plain collodion.

So far every operation can be performed in the daylight; but as we are now about to form a sensitive compound, by the addition of the silver solution, we must repair to a room into which only yellow light is admitted. This room need not be so dark as that required for dry plates; indeed in a room lighted by one gas-burner the work may be carried on at night with perfect safety. The silver solution should be added drop by drop, stirring the while, when the collodion will be observed to turn milky. This change is due to the formation

of chloride of silver. After all the silver has been added, the whole should be thoroughly well shaken, and then allowed to stand for some hours before using, so as to allow all the air-bubbles to come to the surface. Filtration may now be proceeded with—any ordinary collodion filter can be used. It often happens that the nitrate of silver, after being dissolved in the alcohol, partly crystallises out. When this is observed, the vessel containing it should immediately be plunged into warm water until it is redissolved.

It will be advisable in coating to use bottles that do not contain more than five or six ounces, and the collodion should never reach higher than the neck. Very good bottles for this purpose are hock bottles, because they are of a non-actinic colour; and, therefore, the contents are quite safe, even if left for some time in daylight; and also because the necks slope gradually upwards, preventing air-bubbles forming in pouring out. Never use a large bottle, or one which is too full.

Now, in coating, first wipe carefully the neck of the bottle, and remove all particles of dried collodion that may be found adhering to it. Next remove all dust from the porcelain-plate, with the albumen edging, with a broad camel's-hair brush, which should be perfectly dry. For holding the plate a pneumatic plate-holder will be found very handy; but should no such thing be at hand, the plate should be held by the extreme point of the thumb and the middle of the first finger. Take up the collodion bottle in the right hand and the plate in the left hand. The collodion should then be poured upon the plate at the upper right-hand corner; the mouth of the bottle nearly touching the plate. By slightly tilting the plate the collodion can be made to flow towards the upper left, and from thence to the lower left, and finally to the right-hand lower corner into another bottle kept especially to receive the superfluous collodion. This must not be again used until it is allowed to settle, as in pouring off many air-bubbles are formed which are not easy to get rid of upon the porcelain film. After pouring the collodion on to the plate, the bottle should be brought slowly back to an upright position, on no account with a jerk. In pouring off, a gentle, rocking motion should be given to the plate, care being taken that no grinding of the plate against the neck of the bottle takes place, as small particles of glass would be liable to subsequently appear in other films, and destroy the picture. The collodion should not be allowed to flow too quickly from the plate, as by so doing it is liable to give a film thicker at the bottom than at the top. Many operators prefer to coat the plate twice over, pouring off the superfluous collodion from the second coating at the opposite corner to the first. By this means a more



brilliant and even picture is, no doubt, obtained. If the plate has been properly coated it should have an even layer, perfectly free from streaks. If the plate has not been kept rocked while the collodion was poured off, parallel lines are likely to show themselves, but these will generally disappear in the drying. In warm weather from two to three minutes will generally be sufficient to cause the plate to set, but by placing the finger very carefully at the extreme corner of the plate from which the collodion was poured off, it can easily be ascertained if the film is thoroughly set or not. If not, it will feel sticky. The plate should then be allowed to dry in a warm room, but should on no account be made too hot. When thoroughly dry it is ready to be printed from.

For printing on porcelain, special printing-frames are constructed and sold by dealers. The upper part holds the negative, it being kept in position by a loose piece of wood and two springs. The lower part is for the plate, which, when in perfect apposition to the negative, is held in place by a loose piece of wood and screw.

Printing must be carried on a little longer than with paper prints and until the dark parts assume a bronze colour. Upon removal from the printing-frame the porcelain should be washed in water containing a little salt, to eliminate the free silver. In placing it under the tap, never allow too strong a stream of water to flow upon it; as it must always be borne in mind that the film is exceedingly tender, and requires very careful handling when wet.

The toning bath is made up as follows:—

(a) Water .....	6 ounces.
Chloride of gold .....	4 grains.
(b) Water .....	6 ounces.
Sulpho-cyanide of ammonium ...	80 grains.
Hyposulphite of soda .....	2 grains.
Carbonate of soda .....	8 grains.

Equal parts of these solutions are added together by adding *a* to *b*; in no case the reverse. Keep the porcelain well under the toning solution, and the solution in motion. As soon as the delicate shading commences to turn a trifle blue it should be taken out and placed in the fixing-bath, without previous washing. The fixing solution is made thus:—

Hyposulphite of soda .....	12 ounces.
Water .....	300 ounces.

As will be observed, a very weak fixing-bath is employed. It is impossible to tell when the porcelain is thoroughly fixed, but with the above solution from five to ten minutes will be sufficient.

After being fixed it should receive the final washing, which should be done in a thorough manner, and with many changes of the water. Always bear in mind that the time is of secondary importance to the number and completeness,

of the changes. This rule applies to all processes where the hypo is to be thoroughly eliminated. By this means one hour will generally suffice, but a little longer will do no harm. It should not, however, be left too long, as it will be found that after a time the colour will recede.

After washing, the plate should be allowed to dry spontaneously. If it is desired to tint the picture, it should be done before varnishing, and all the colours used should contain an abundance of gum arabic.

After having retouched and tinted the porcelain picture, the next thing is to varnish it. The best varnish for this purpose can be made by dissolving one pound of best white shellac in three quarts of alcohol. After it is dissolved, it should be filtered through two or three thicknesses of filtering-paper. Before varnishing, the porcelain plate should be sufficiently warmed to remove the chill from the plate. Coat it with the varnish in exactly the same manner as previously described in the collodionising of the plate. The plate is then warmed before the fire, and it is finished ready for mounting.

Of the few failures that are likely to occur in this process, the following are the causes:—

*In the Coating.*—The collodion does not flow readily, but appears very thick. The bottle has been left uncorked, and evaporation has taken place. A mixture of equal parts of ether and alcohol must be added.

*In the Printing.*—Double prints are caused by the moving of either the negative or the porcelain plate while in the printing-frame; blurred prints by imperfect contact between the negative and plate. Some parts print darker than others; this is the fault of the coating, the collodion wave having been allowed to run over the same place twice. Weak prints: when the whole of the silver solution has not been added, the emulsion is too thin or too much alcohol has been added. When the emulsion is too thin, collodion should be dissolved in it; this will give it the necessary consistency.

*In the Toning.*—Unequal toning is caused by either too strong a gold bath, or it has not been kept in motion. Never add gold solution to the toning-bath while the plate is in it.

*In the Fixing,* the plates will very rapidly discolour when insufficiently fixed; always use a warmed hypo bath. Scratches or stains in any of the operations are the result of careless manipulation.

*Fading of the Prints.*—This is very often due to the colouring and other matter, which has been left in the plate itself, and often due to insufficient fixing and washing out of the hypsulphite. Always do these in a thorough manner, and there is no doubt that, in nine cases out of ten, the porcelain will retain its original beauty for many years.



## EASTMAN'S STRIPPING FILMS.

BY ANDREW PRINGLE.



GOOD many months have passed since first I came into possession of a sample of the above-named films, and from the time when first I used them I have never ceased to find vast satisfaction in the operations performed in, and the results obtained by, the process. For reasons best known to the manufacturer, these films, though easily obtained in America under the name of "American" films, were never placed upon our British market. I could only by reiterated and urgent appeals to the Eastman Company obtain a few spools for myself and a few friends; but at last Mr. Eastman, having, as I believe, got rid of certain imperfections in the manufacture, has thought fit to make these films an article of commerce in the English photographic market. As I believe that those who see the results obtained with these films, and those who are aware of the theoretical advantages certain to mark their use, will be pretty sure to try, at least, if not finally to adopt them, I think I may be doing a service to the readers of this eminently practical journal by describing the operations and precautions necessary for complete success with the films. I do not deny that the operations after development may seem tedious to many persons; but in my opinion the perfection of result amply atones for the trouble required to produce it; and while I admit that the operations occupy a considerable time, I assert that there is no real difficulty nor mystery about them; it is all a matter of patience, plain-sailing, and common sense.

The paper is coated in the first place with a solution of soluble gelatine, which is "calendered," and in its turn coated with a sensitive emulsion, rendered totally insoluble in water by means of alum. That is the whole affair so far as the preparation of the films is concerned. I do not believe that so long as the films are kept dry the insolubility of the emulsion-gelatine will, within any reasonable time, communicate itself to the originally soluble substratum. Theoretically, I do not see how it can; and, practically, with me it has not done it. I have films dated March 4 now in my possession, and they strip as well as ever they did, except one or two pieces, which I deliberately allowed to get damp.

The directions which were issued by the makers warned me against the use of pyrogallol in the developer, and insisted on the use of ferrous oxalate. I do not think I have ever yet developed one of these films with ferrous oxalate, but have always used alkaline pyro, and never yet has a properly-kept film—that is, a film kept dry—re-

fused to strip in my hands. I admit the tanning power of pyro, but I think the alkali restrains that power sufficiently for our purpose. The development is conducted in the usual way, but is carried to a slight degree further than for a negative where the paper is destined to remain. Of course, no alum must be used at this stage.

A solution of pure india-rubber in benzole (also pure) is made of such a strength as to run quite freely over a plate of glass, well cleaned, and a size larger than the negative. Five grains to each ounce of benzole is the quantity of india-rubber laid down in the directions. The solution is run over the plate in the same manner as collodion, and the plate is set to dry, which it will do in a few minutes. The film is now squeezed face downwards upon this rubber-coated plate, the hypo having been well washed out, especially from the front of the film. The back will get a good washing after the paper is removed. The whole is now allowed to dry, and it must be really dry before the next operation is attempted.

We now come to the exciting part or the operations. The film adhering to the glass plate being thoroughly dry, it is immersed in a bath of water about 120 deg. Fahr. The heat is gradually raised till it reaches about 200 deg. Fahr. Probably bubbles will appear under the paper at some stage of this operation. They are signs that all is going well. After a minute or two at 200 deg. Fahr., a corner of the paper may be raised by means of a pair of blunt forceps, or a hair-pin, or anything not too sharp, and the paper can be gently lifted off, the whole plate and gelatine film remaining in the water all the time. I have poured boiling water right upon the paper without doing any damage. The hot water is now cooled gradually down, and the film well washed under a rose-tap, being the while rubbed with the soft part of the fingers, to remove any gelatine or impurities that may remain upon it. Then the film is alumed as usual, in presence of an acid, if desired. It will be easily understood that the washing of a film of this kind can without great trouble be made very complete, for the image-bearing film is very thin, and we have washed it both front and back. As a result, we find great facility in intensification. I have myself held a plate at this stage in my hand, and intensified it with pyro and acid silver just as if it were a collodion plate.

Now, there are many cases where we do not object to a reversed negative as the film now is; so, if we wish, we can dry the negative as it is, and leave it on the glass. Further, we can dry the negative at this stage, and we shall find it most amenable to retouching. We have even the liberty to change our mind after drying the negative, for it will still strip quite well if properly wetted before the next operation. But in all



probability we shall want to strip our negative from the glass, and so complete the operation of producing a film negative. There are two methods, in theory alike, but in practice different, of stripping our film and getting rid of the glass. The first is to pour on the film—the glass being levelled—a solution of gelatine containing a certain quantity of glycerine, thus :—

Gelatine .....	$\frac{1}{2}$ a pound
Glycerine .....	800 grains
Water .....	40 ounces

with a small quantity of carbolic acid (160 grains) dissolved in alcohol and water. When the gelatine has set, the plate can be dried in a place free from dust. This is the Eastman direction. But a much more convenient method is to get what the Eastman Company call a “skin,” which is a gelatine-glycerine film, prepared by pouring the hot solution on a ground-glass plate, setting and drying it, and then stripping. The Company sells these skins, and the method of using them is as follows. The skin being cut rather smaller than the film on the plate is soaked till quite limp, in water containing from three to five per cent. of glycerine. I find this quantity of glycerine quite sufficient to prevent dialysis of the glycerine in the “skin.” The skin is then squeezed to the film and the whole again set to dry. Drying must be spontaneous and *thorough*. When the film is really dry, the edges are cut round with a sharp knife and pulled off the plate, and the manner in which they come off is a good guide as to whether the body of the negative is dry or not. The edges ought not to, and will not, spring from the plate, but they ought, on being pulled, to come away sweetly and evenly, otherwise the film is not quite dry. The edges being removed, and the body of the film neatly squared, and any necessary spotting or retouching having been performed, one corner of the film is raised, a firm grasp taken, and the film pulled steadily from the plate. If the film has not been thoroughly dry it will still come off, but will require stronger pulling, and may be pulled out of shape, which will spoil it for ever. When the film is thus stripped, all that remains to be done is the removal from the face of the film of the india-rubber. This removal I effect by rubbing with the ball of the hand ; a few short rubs in the middle “start” the rubber, and longer strokes to the edges bring off the gum in little round pellets. The film can be varnished if desired ; it is laid on a glass plate and a *cold* varnish poured deftly on in the usual way. If any varnish gets on the back it can be removed by benzole or the solvent of the varnish, whatever it may be.

The following are the causes that I think most likely to lead to failure :—A very prolonged development with pyro might possibly lead to insolubility of the substratum. If before stripping off

the paper the film is not dry, it may leave the glass plate or the rubber, bringing away the gelatine film. Too sudden cooling of the stripping water, or too much acid in the alum, or too strong friction of the film under the tap may cause blisters. Imperfect drying of the film before the final strip will certainly cause the film to be pulled out of shape, and in drying thereafter it will curl to a certain extent. If the finally-stripped film is moist and “wobbly,” there was too much glycerine ; if hard and horny, too little glycerine in the water in which the skin was soaked. If the skin on being squeezed to the film does not adhere at once, but leaves it with the rubber-cloth, the skin has probably been too long soaked. If the finished negative is very limp, the skin has been too thin.

If none of these faults are present, the negative, if properly exposed and developed, will be superior in several respects and equal in all others to any glass negative. The finished films must not be kept in a damp place, as they are apt to get mouldy in such circumstances.

## THE PALL MALL EXHIBITION.

### CONCLUDING NOTICE.



LOOKING for the last time round the walls of the Exhibition we are reminded again and again of the impossibility of doing fair justice to all the works shown. There are so many pictures which are beautiful examples of photography that we feel convinced that, had they been exhibited a few years ago, each one would have been deemed worthy of a medal. But the power of producing perfect pictures has progressed with such marvellous rapidity that now nearly all come very near to the first rank, and the judges must have had a very difficult task before them when they had to determine to whom the medals were to go. No one can complain of their judgment, but many must regret that some fine pictures have been passed over without any kind of recognition. Taking up our survey of the pictures at the point where we left off last month, we find that the first frame which calls for remark is that containing some very curious cloud effects at Monte Carlo, No. 118. In one of these a heavy thunder-cloud is seen hovering over the sea—its lower part shedding a deluge of dark rain which joins it to the ocean. In the other picture the same cloud has arrived over the town, and is apparently about to spend its violence there. Mr. Underwood French, who took these pictures, has another frame of studies at Monte Carlo, one of which has evidently been taken in the finest of weather, for the horses' heads are protected with



sun-bonnets. In No. 127, the School of Military Engineering exhibits some very beautiful studies of Furness Abbey, which not only show technical excellence but judicious choice of subject. In 244 the same exhibitors have contributed a set of landscapes of which the same high character may be given. No one can beat Mr. Adcock in rough figure-studies, and his picture of a boy leaning against a wall and winding the string round a peg-top fully comes up to the high average of his work. The pose is easy, natural, and picturesque. We certainly thought that on entering the quiet exhibition gallery we should be spared any reminder of that exasperating melody called "The Lost Chord"—but here, on the walls, is a picture with that title. A boy sitting in a chair and playing upon that equally exasperating thing called a concertina. Mr. Alfred Ellis, who is the author of this picture, shows a far better one just below it—No. 141, "A Daughter of Erin." This represents an unmistakable London flower-girl, who is tying up a bunch of her sweet merchandise, while she holds the end of the string between her lips. She is apparently pausing in her work to answer a question. The picture attracts because it is so thoroughly true to nature. With a glance

of admiration at Mr. Bankart's two lovely views on the River Eden, Cumberland, we come to an enlargement of a picture, the original of which is hung opposite, and which has gained a medal. This is "Neddy's New Shoes," by Mr. R. H. Lord. Neddy is a donkey, who is under the hands of the farrier. The picture is full of life, and must have been a difficult one to secure with such successful results. No. 157 is a frame containing three very artistic enlargements, by Lieut. Croft, R.N. They are named, respectively, "The artist's daughter," "A Rose in June," and "Study of a Dutch

Peasant." Unfortunately, this frame is hung so high that the pictures cannot receive that careful examination which they undoubtedly merit. No. 158 is another good enlargement, by Mr. James Martin, which is hung in a far better position. Here we have three people in a rowing-boat on some fair reach of the Thames—it looks like Shepperton. One of the lady rowers is looking round, and evidently she gives the picture its somewhat silly title "Do they see us?" It might with equal relevance be called, "Is that Jimmy coming?" or, "Has my back hair fallen over-

board?" A pretty picture should have a pretty title, and we venture to suggest that a better one would have been "Water Lilies." For a contrast to this subject we have not to look far. Close to it (No. 159) is an enlargement by Messrs. Morgan & Kidd, of a subject hardly fit for reproduction by the Camera—although the artist would perhaps consider himself warranted in his work—because similar pictures are sold in the streets of Palermo. It is a picture of the interior of the Capuchin Catacomb there, where bodies of dead monks, dried and withered, and apparently in every stage of decay, stand in serried rows, ticketed with their names and the dates of their decease. Those of



A Lane. (By Morgan & Kidd.)

most saintly memory have niches to themselves, and are caged in with wire netting, such as we use for rabbit-hutches. The enlargement is a fine one, but the subject is simply horrid and repulsive. We must not omit to notice some very excellent pictures, ten in number, contributed by Mr. Harry Tolley. It is not every amateur who aspires to 15 x 12 plates, but these pictures are all of that size, and are well printed in platinum. The subjects are chosen with artistic feeling, and two of them especially are worthy of high praise. These are "Fishing in Miller's Dale," No. 123, and "Idle



Moments, Lowestoft." This last picture is full of charm. Two old boats lie at the edge of the water, and two fishermen are near them, evidently with nothing to do. The scene might be called "Sunday Morning," for there is an atmosphere of stillness about the composition which the artist could not have better secured had he really defied Mrs. Grundy and the entire bench of bishops by trotting out his 15 x 12 camera on the first day of the week.

Mr. T. A. Green must be complimented upon his very beautiful Westmoreland landscapes, Nos. 167 to 170. The subjects are such as to present great difficulties in the way of correct focussing—difficulties which he has succeeded in overcoming. In No. 189, "Feeding Pigeons," Messrs. Downing have aimed rather too high. The intention is good, but does not come up to former work which we have seen by the same artists. The grouping of the classically-draped figures is admirable, but the picture is spoilt by want of artistic lighting—the whole composition wanting contrast. Nor can we consider the work as a good example of platino-type printing. Capt. Harrison's yacht views—taken at Ryde Regatta—are good, and are especially worthy of attention because the prints are taken from film negatives. There is a

slight appearance of grain about the skies, but we are free to confess that we should hardly have noticed it had we not carefully looked for it. Next we come to two very fine enlargements, Nos. 198 and 200, by our esteemed contributor, Dr. G. Lindsay Johnson. The first one, "Crevasse in the Upper Grindelwald Glacier," is a valuable contribution to physical geography, for it represents a thing that cannot be adequately described without a picture, and to be of any use to the student that picture must be a natural photograph. The other is a view of "Chillon Castle,"

which is not only a photograph—it is a picture. Mr. W. W. Winter exhibits a work full of humour, which is not forced, and this is a good deal to say of a photograph which attempts to portray the funny side of human nature. Humorous photographs, as a rule, are akin to magisterial jokes; and we all know what dismal things those are. In this picture (No. 208), a village rhymester, has compelled a companion to listen to a reading of his own compositions. The sometime listener has fallen asleep in his chair under the infliction. Many painters have harped

upon this same string, but it is a difficult matter to arrange sitters—who must be actors too—so that they shall convey so well the same idea through the medium of photography.

The medal pictures of Mr. G. Broksch, numbered 232–237, are very fine examples of large direct photographs. The three first are most admirable portraits, the remainder being pictures which tell a story in a more or less satisfactory manner. Like many pictures of the kind, these are rather artificial in character, the best one being that named "Presumption." In this picture a footman lolls back in the chair of his absent master smoking a cigar, while, half amused and half frightened at the man's "presumption," the cook and house-



A Study. (By F. W. Broadhead.)

maid of the establishment look on. In No. 249 we have some portraits of children by Mr. Leonard Blake, and one of them has most deservedly won a medal. This picture is certainly one of the gems of the Exhibition. A child in its nightgown is standing holding a bunch of flowers—a subject simple in itself, but rendered in the most artistic manner. The background has evidently been painted for the portrait, and, although it consists of a few touches of different tints, with no attempt at subject or detail, those tints have been so arranged as to relieve the dark



and light portions of the figure which stands in front. The picture has the aspect of a study in black and white by Sir Joshua, but such truth to nature even Sir Joshua could only dream of. No. 283, "Dozing," is another gem, and many have wondered why the judges have passed it over. It is a picture of squalor. A wretched hovel door serves as a frame to a poor woman sitting on its step with a baby half asleep held to her breast. It is a little touch of nature, with nothing artificial about it, and the very dirty surroundings are all in keeping. In frame No. 292 are three capital pictures of cattle, taken when cattle look their best, standing in shallow water, and reflected by it. The enlargement of the east end of Exeter Cathedral (No. 303), on bromide paper, by Messrs. Samuel Fry & Co., is perhaps the finest example of interior work in the Exhibition. Next we have to notice a frame of platinotype pictures (No. 314), "Idyls of Capri." These pictures are full of poetical feeling, and the judges no doubt recognised this rare quality in awarding them a medal. They are not remarkable for technical excellence. In "Forty Winks," No. 315, "a horny-handed son of toil," otherwise a rough labourer, is asleep against a tree. The head forms a fine study of rugged human nature. Nos. 326 and 397 are frames sent in by Mr. Melton Prior, the talented war correspondent and artist. They exhibit scenes and types of character taken in Burma, and show how useful, if not necessary, the camera has become to the "special" of our newspapers. It will be remembered that poor Cameron, the correspondent of the *Standard*, who was killed a couple of years ago in the Soudan, sent home a number of negatives taken in that unfortunate country. He was, we believe, the first war correspondent who availed himself of the aid of photography.

The views in New Zealand (No. 335), contributed by Mr. Evans, though small in size, are full of exquisite detail. Close to them, and hung on the line, is a picture called "They hurried along in blinding snow." This is about the worst thing exhibited, and is as artificial as the snow and figures on the top of a twelfth cake. Nos. 357 to 361 are beautifully delicate and carefully-posed portraits by H. S. Mendelssohn. The finest, perhaps, is that of the girl—an ideal Marguerite, to our thinking—whose well-cut features are in profile as she looks towards a window. No. 401, "Views in Australia," taken by Mr. G. W. Parton, a member of the Amateur Society at Victoria, shows excellent work, which is equal in quality to pictures sent by the same society to the big show at South Kensington. No. 402 contains some very artistic portraits by Messrs. B. Scott & Sons.

## ON THE SCREENS.

It is an unfortunate circumstance that many of the pictures which are hung on the four screens receive so little light from the skylights above that it is next to impossible to do justice to them. In the dull days of November this is especially the case; and it would, perhaps, be as well on a future occasion to alter the position of these screens. If they radiated from the centre of the room, they would receive far more daylight; and, although this alteration would, to a certain extent, sacrifice room and convenience, the main object of the Exhibition—which is to exhibit the pictures—would be better served. Here we find a medal picture (No. 464), called "Water-Rats," by Mr. F. M. Sutcliffe. The subject is a novel one. Two boats—one sunk in the mud—are surrounded by naked boys, genuine mudlarks of the Thames. The picture is a clever one, and must have cost the taker much pains, we trust not of a rheumatic character. On the dark side of the same screen are two fine bust-portraits by Messrs. Mavius & Vivash, which, by lifting up from their supports, we are able to judge the excellence of. Their numbers are 487 and 500. In 525 we have another most original subject, by that accomplished photographer, Lady Brassey. It is a swimming-race, with the competitors—one of whom is a lady—going well through the water. The effect is most curious, and the ripples and bubbles closing round the heads of the swimmers form quite a study in themselves. Lady Brassey is also responsible for another water-scene, No. 552, "Waif Afloat." In this picture a dog is sitting upon a life-buoy, and apparently enjoying the fun of the situation. Another frame of pictures by Lady Brassey (605) contains a series of six views of more than passing interest. They represent the crater of a volcano in the Lipari Islands. It may not be generally known that this group of volcanoes is one of the few known to the ancients, and that from the name of one of them—"Vulcano"—comes our modern word to express all natural phenomena of the kind. It may not be generally known, too, that many of the products of this volcanic region possess a commercial value, and that an enterprising firm—a Scotch one, by the way—has established works there for the removal of the various substances which are deposited round the fissures, which deposits are renewed again and again by the ever-busy hand of nature. Lady Brassey must be complimented upon her work, as well as thanked for bringing before us, in such a vivid manner, weird scenes which very few have the opportunity of beholding.

Mr. G. B. Wood exhibits no fewer than fifteen frames, which are mostly filled by laughable subjects. One of these has obtained a medal. But



for a really funny little picture we must look below to frame 640, "Bits of Colour," by Mr. R. S. Redfield. Here are three little niggers sitting in the doorway of a wooden house. They are grave and stupid-looking, while their bullet, woolly-coated heads give them a most comic appearance to English eyes. Nos. 558 and 585, named "Sorrow" and "Piety," respectively, are two very fine studies of the same female head, by Mr. D. De Lara Cohen. Mr. Cohen has been fortunate in having such a model, and he evidently knows how to make a portrait express an idea.

In closing our notice of the Exhibition pictures of 1885, we must express regret that want of space has compelled us to pass over many which were well worthy of careful examination.

### APPARATUS.

Three medals have been awarded by the judges to the apparatus exhibited. One of these goes to the portable electric battery by Schanschieffs, and which is exhibited in conjunction with incandescent lamps which can be made to give either white or red light at the will of the operator—a comfortable arrangement, indeed, if this battery, unlike most things of the kind, is fairly constant, and will work without attention. Another medal goes to some fine micro-photographs for the lantern prepared by the Woodbury process and exhibited by Mr. Smith. The third medal is awarded to Messrs. G. Houghton & Sons for their portable developing sink. This sink, with its fittings, is quite a piece of furniture, for it comprises shelves, racks, and every convenience for the stowage of bottles, dishes, &c. But a sink which requires attachment to the water-supply and to a waste-pipe cannot well be considered as portable. This is, perhaps, but a fault of description. The apparatus is well-constructed and arranged, and is sure to be adopted by many photographers.

A number of cameras are exhibited, but they comprise little that is new, if we except the addition of roller slides of various kinds which, since the Eastman Company came upon the scene, have been called into being. (Even these are not really new, for poor Woodbury described an arrangement of the kind about twelve years ago. Still, the Eastman Company must be credited for putting the idea into practical form.) The improvements shown in cameras are only in the matter of detail. Thus Messrs. Watson & Son have invented and patented new stops to the shutters of their dark slides, which present many advantages over the old pattern. Messrs. Rouch, Fallowfield, McKellen, and others all show improvements in the cameras with which their names are asso-

ciated. Surely perfect cabinet work was never better exhibited than in the modern camera, and this perfection of workmanship seems to attach itself to all the exhibits. The "Rayment" camera in particular claims attention, both for its beauty of workmanship, and for the ease and readiness with which it can be put into action. The Eclipse changing tent—made umbrella-fashion, to take up and down in a second, for changing and developing purposes—is a novelty. It packs into such small space that the tourist can easily carry his tent with him in one hand. This, and the Rayment camera, are exhibited by the London Stereoscopic Company.

Mr. Gotz makes a new departure in a shutter attached to a camera of his construction. This shutter may be described as a repeater, for, after being wound up, it will retain sufficient energy for several exposures without any resetting. It would be very valuable for instantaneous pictures, which require to be taken one after the other as quickly as possible, as in the case, for instance, of yachting scenes, when the subjects are liable to

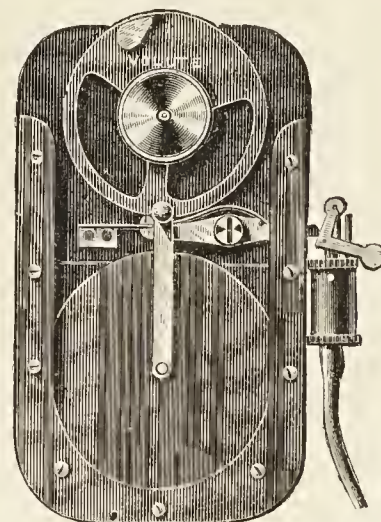


Fig. 1.

run away from the camera before a sufficient number of pictures can be secured. The shutter is illustrated in Fig. 1.

Mr. J. Place, of Birmingham, exhibits an exposing-shutter, which is of beautifully simple action and design. It is illustrated in Fig. 2, and by the same cut is shown a diagram which will make clear its mode of action. The framing of the shutter consists of a box containing two grooves, in each of which slides a vulcanite plate. The two plates are hung upon a cord, which passes over a little wooden roller at the top of the apparatus, while a silk cord is hung to the lower end of each vulcanite plate, and passes through holes to the outside. If one cord be pulled while the lens aperture is obscured by one of the vulcanite screens, the other screen will be pulled down in its groove whilst its fellow rises. It is thus possible to raise



the shutter slowly for foreground exposure, and terminate it quickly, so that the sky may not be overdone. The working of the shutter is so frictionless that there is no chance of vibration to the

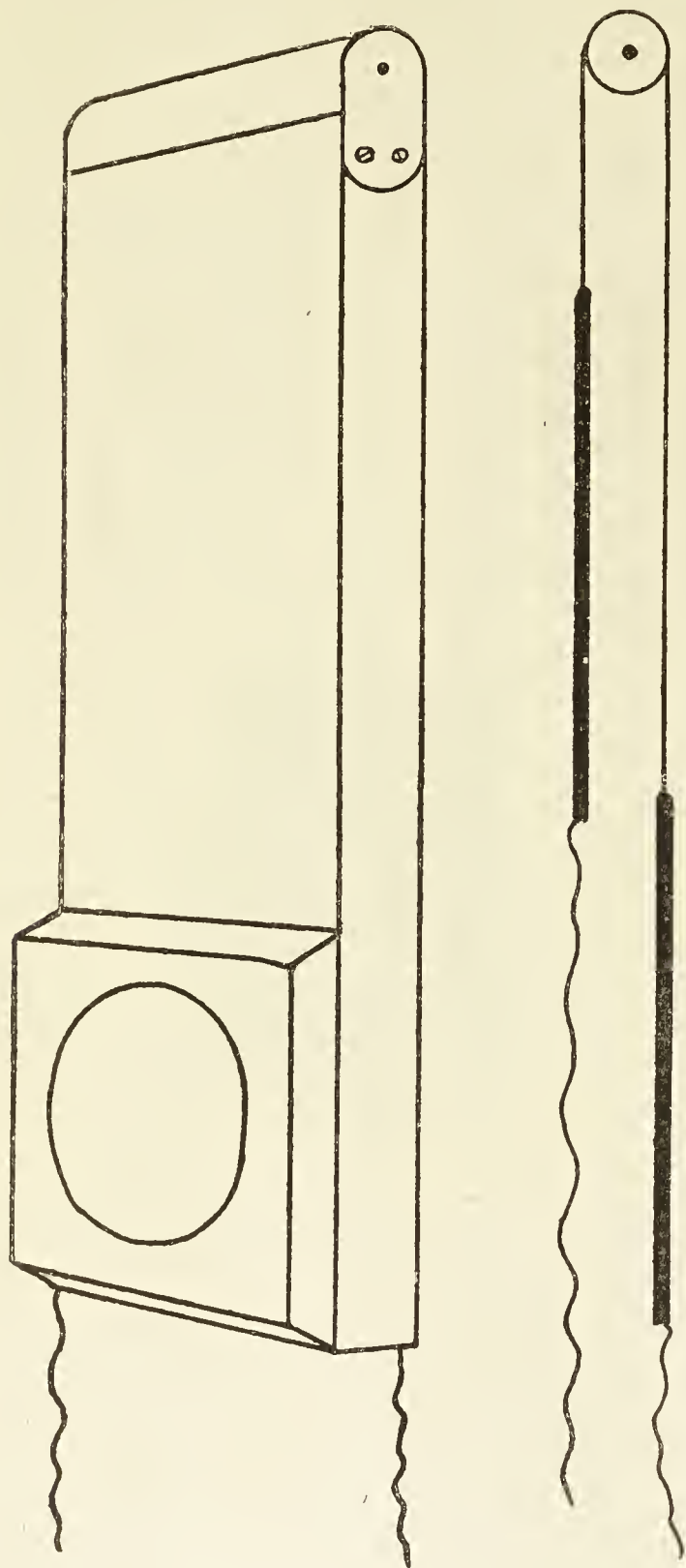


Fig. 2.

camera. The shutter is an improvement upon one introduced years ago by the late Mr. Dalmeyer, a specimen of which is before us as we write. In this old form the shutter is made of slips of thin wood, faced with calico or cloth, and is in one

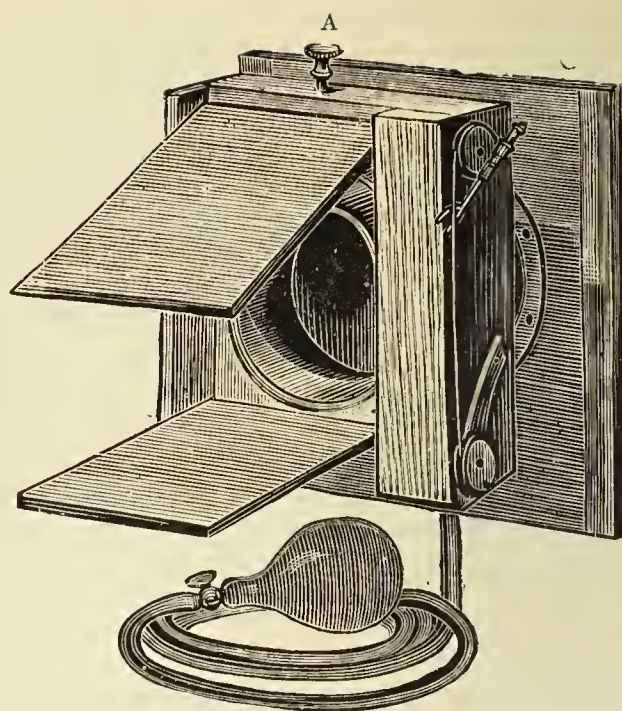


Fig. 3.

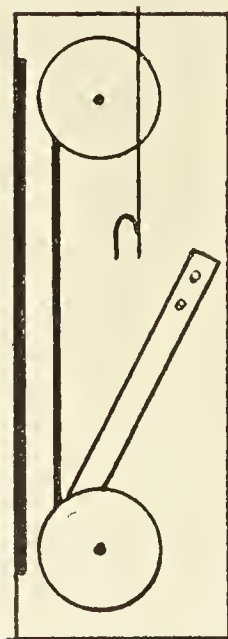


Fig. 4.

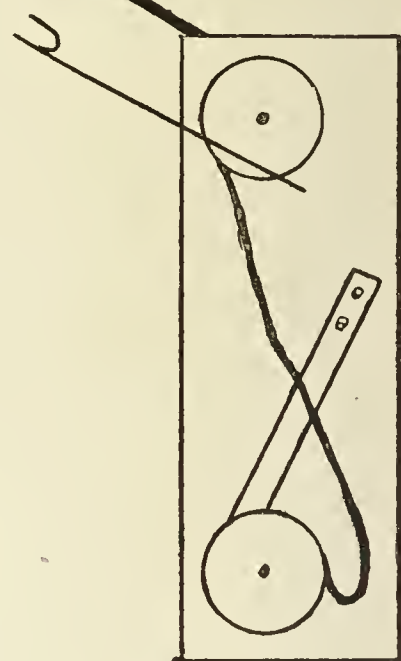


Fig. 4A.



piece, and long enough to stretch over the roller. A cord attached to each end of this flexible screen pulls it over in either direction. The shutter is much heavier in construction than Mr. Place's, and requires a far more vigorous pull to put it into action.

The shutter patented by Guerry, and exhibited by the Photographic Stores Company, possesses several new features. Chief among these is the manner in which it is adjusted to the hood of the lens, whereby hoods of different sizes can be grasped by it. To accomplish this, the screw (A) seen at the top of the instrument (see Fig. 3) is armed at its base with a semicircular bar covered with indiarubber, and it is this bar which holds the shutter on the hood of the lens. Fig. 4 shows

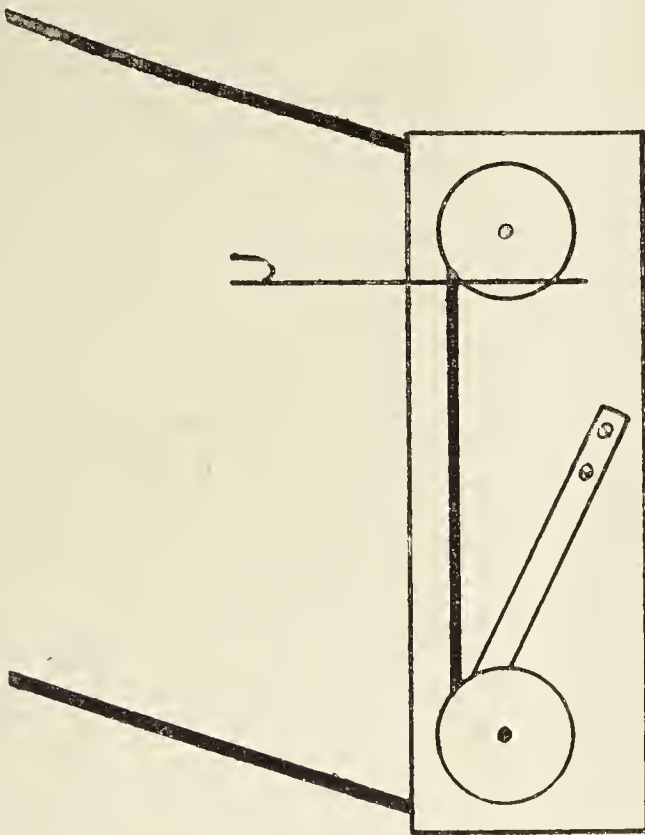


Fig. 5.

the shutter ready for action, the lower flap being hung below, and the upper flap covering the lens aperture. On pressing the pneumatic ball, the flaps take up the position shown in Fig. 5, both moving parallel to one another. This position can be maintained, for focussing purposes, by shutting a little stop-cock, with which the indiarubber tube near the pneumatic ball is provided. This is quite a new addition to the pneumatic arrangement, and is worthy of notice. The little forked bar which is attached to the upper wheel of the apparatus will now require a few words of explanation. It can be so placed that the fork as the shutter moves will catch the cord which connects the two wheels together, thereby quickening the motion of the lower flap. By this ex-

pedient, therefore, the sky receives a very short exposure in comparison with the foreground. This shutter is a very useful one, and, when its working is once understood, will give the operator the power of varying his exposures to a very remarkable degree. One flap can be used without the other, as shown in Fig. 4A.

## ON THE EXERCISE OF TASTE IN PHOTOGRAPHIC PRINTING.

BY VALENTINE BLANCHARD.



IN a former article on this subject, I referred to the painter's opinion of a photograph—that, taken as a pictorial rendering of nature, it was most untrue. Now, the photographer of taste cannot make a bad negative into an absolutely good one; but he can, by the exercise of art-feeling, and, in a manner, by imitating the practice of the painter, so modify the shortcomings of the negative as to produce, in the print at least, a respectable result.

The painter has the power, whilst the work is under hand, to heighten an effect in one part of his picture or tone down in another at will, but the photographer, unfortunately, can only do this to a very limited extent; but more can be done in this direction than is generally imagined, and all means are fair so that the end is gained, viz., more harmony in the finished picture.

Some years ago I had the pleasure of inspecting the printing operations of a very eminent photographer and publisher of views taken in every part of the world. The pictures were all of one size, and were so arranged that four were printed together on a whole sheet of paper, and any want of uniformity in the density of the negatives was made up by sheets of *papier mineral*\* pasted on the back. The operations in this establishment were not unlike those performed by the skilled printer of fine wood engravings. A simple impression from the finest engraving on wood is anything but an artistic production. A heavy, dull print, quite wanting in gradation, is the result. The proof impression is made by the engraver himself, but not at the printing press. The block is inked, and a piece of India paper laid on it. The impression is made by the aid of a burnisher, and the artist touches his work with loving hands. Where boldness is wanted, he rubs with firmness, but where delicate lines have to be rendered—as in the distance of a landscape, for instance—the burnisher only lightly touches the back of the paper, and the proof, in consequence,

\* *Papier mineral* is a very transparent tracing-paper made in France, and, unlike most tracing-papers, does not discolour with age.



is an artistic production. The printer has to imitate this, and, by a series of very thin pieces of paper, called "over-lays"—applied with taste, he increases the thickness in the shadows, and takes it off on the lighter tints, so that when the weight of the press comes on to the block it is greater or lesser on its various parts, according to the requirements of the artist.

In the establishment referred to, the variety of effect required was produced by a series of what may be called underlays, for in some of the negatives there were as many as three or four thicknesses of *papier mineral* applied to the back.

The room in which the manipulation of the negatives for printing took place was so ingenious in its arrangement that it may with advantage be described here. The window, instead of being in its usual position, was so low down that the lower half was below the level of a very slightly-inclined bench, which had inserted in it a large piece of thick plate-glass. Below this was a mirror placed at the right angles for throwing a flood of light from the sky upwards, and thus illuminating from below any negative placed on this transparent bench. No other light was admitted, for the upper portion of the window was darkened. In the process of manipulation, a piece of *papier mineral* was fastened by the edges to the back of the negative, and by the aid of the transmitted light, the operator proceeded to improve the negative, putting in clouds with black-lead by means of a crayon stump, or, when necessary, by bold washes of indigo, according to the requirements of the subject.

Wherever the shadows were not strong enough, or if in places the lights were too dense to permit the detail to print through, portions of the transparent paper were cut away with a sharp knife; and in some cases these cutting-out operations were repeated on several thicknesses of the paper, the parts to be cut out being lightly drawn with a pencil, and the cutting-out done away from the negative, so as not to disturb the *underlay* already applied.

By these means the series acquired a certain uniform quality, which gave them a distinctive appearance quite their own; and as the negatives were taken in all parts of the world by different operators, and were of the most varied character, some plan like the above was probably necessary from a commercial point of view. I do not wish it to be inferred from what I have written above, that I advocate indiscriminate doctoring of negatives, for the object is only to indicate to the amateur the means at his disposal for the improvement of those which in his opinion fall short of the artistic excellence he had hoped to secure.

A few days ago I had occasion to print some negatives made by a pupil. Among them were

two or three which just missed being very fine indeed. They were most artistic in selection, but were wanting in force. Extremely delicate and full of half-tone, they only wanted the few touches of high light and shadow which the painter would at once have given to his canvas to secure the end desired—viz., a little more force. Bearing in mind the requirements of this article, I made some experiments which I will now proceed to describe, as well as the results obtained:—

One of the negatives was a charming little picture on the Thames. It was evidently taken late in the evening on a very calm day. A slight river mist was stealing over the distance, for the far-off trees were rendered by varying shades of grey, unrelieved by detail in the leafage. A small rush-grown eyot is not far distant, and coming round this is a boat occupied by a single figure—a man, who is arresting its speed to avoid a foul with another boat occupied by a fair crew of four ladies. The action is most natural, and here was a charming picture, but wanting that little *something*. The soft grey of the distance was natural enough, if only there could have been a little more relief in the foreground. I thinned down some white, hard varnish with a small quantity of methylated spirit, and added a small portion of yellow dye so as to produce a canary colour. This was poured on the back of the negative and dried by heat. When quite hard I took a sharp penknife and, placing the negative on the retouching desk, I proceeded to scratch away here and there the deepest shadows in the rushes, and in the darkest parts of the boat; in fact, in every place I deemed necessary to give point to the picture. When all needful to be done had been done to the shadows, I applied myself to the high lights. A few touches on the dresses of the ladies, and on some weeds in the foreground, as well as one or two here and there on the reflections in the water, completed the operations, and a print was made to compare with those produced before the manipulation on the negative. The result was most successful. The picture had now acquired the *something* it lacked before, and was very much more artistic.

The other negative was also a Thames view. A distant bridge, a curved bank with rushes in the foreground, and trees to the right of the picture. Again here was an extremely delicate negative, with all the gradations in the running stream well rendered, as well as clouds faintly indicated, and only wanting a few touches here and there to make it perfect. The canary varnish was applied to the back as before, and the penknife again used, the deepest shadows only being helped by scraping away the varnish, and that only in the foreground. A few touches of indigo on the water in the high lights under the arches of the bridge, and one or



two to help out the clouds, were all that were necessary to give life to the distance. A print at once revealed the immense improvement when compared with the one from the untouched negative.

These two illustrations will, it is hoped, help the earnest amateur who desires to make *pictures* as well as photographs; but more is still to be said on the subject.

## THE OPTICAL LANTERN.—II.

BY THE EDITOR.



It often occurs that a drawing, diagram, or paper photograph (the negative of which is not available) is required to be copied for lantern purposes, and many inquiries have been made as to the best form of lens to use, and the best way of doing this work. The lens should be of short focus—say not more than five inches—and should be of the “portable symmetrical” type. The camera (of quarter-plate size) should be placed on a deal table, which has had tacked on its surface a couple of laths, between which the camera can easily slide to and fro. At the end of the table must be nailed a vertical deal board, to which the drawings to be copied can be pinned, so as to face the lens. Failing this, a heavy box placed on the table will answer the purpose. On the ground-glass screen of the camera must be drawn a circle three inches in diameter, and, in focussing, the image must be contained in this circle. By placing the focussing-cloth over the head, and moving the camera to and fro, the right size can soon be secured, while the actual sharpness of the image can be obtained by working the focussing-screw of the camera. A focussing-glass is most useful in this work. If the copy should be of such a nature—a portrait, for instance—that it has no hard or distinct lines, and it is found, therefore, very difficult to get a distinct image on the ground glass, the following expedient may be resorted to:—Cut an inch from a newspaper where the type is clear and distinct; wet it with the tongue and attach it to the surface of the copy. Now focus the letters, but don’t, oh! don’t forget to remove that little bit of newspaper before the time of actual exposure comes. (I remember copying in this way the portrait of a lady, and when it came to be developed, the face was disfigured with a placard announcing, “This desirable property to be let.”) With regard to exposure, the usual stereotyped directions seem to be inevitable, and which are summed up in the formula “*experientia docet*.” But I will try to give a more useful guide. Supposing that you

are using a Ross symmetrical lens, No. 3, 5-inch focus, and are copying a positive measuring  $12 \times 10$ , the right exposure will be, with stop No. 4, on a fine day by reflected skylight (not sunshine) and in the open air, about twenty seconds. This is for mid-day; in the early morning, or in the afternoon, the exposure must, of course, be prolonged. Very quick plates will shorten the time, but not more than five seconds or so. Always work with watch in hand, and see that the cap of the lens slips readily on and off. Take care that the copy does not face any brilliantly-lighted object, such as a greenhouse or a whitewashed wall, which may cause reflections from the shiny surface of the copy—if a paper print. There are two methods by which granularity may be avoided (the granularity which I allude to being caused by the reproduction in the negative—often in a much exaggerated form—of the grain of the paper upon which the original picture is produced. Of course, such granularity is not present when a drawing on smooth card or paper is in question, but is commonly seen on an albumenised print). The first and easier method is to shut the print up in a printing-frame with a thin and clear sheet of glass in front of it before copying it. This first plan is the best to adopt when the photograph is mounted on card, and must not, or cannot, be detached from its support. The other plan is adapted to the copying of unmounted prints. Soak it in water for a few minutes, and then lay it on a porcelain or opal plate—an ordinary dinner-dish will do at a pinch. The water fills in all the interstices caused by the grain of the paper, and the white plate beneath preserves the purity of the lights of the picture while it is being photographed.

Advantage will be found in using a developer which will give a black or grey deposit, in preference to one which will afford an image which is at all yellow. Beach’s developer, or any alkaline developer in which sulphite of soda is used, the carbonate of soda, followed by iron-clearing solution, as recommended on a previous page, or ferrous oxalate will all secure this end, and will save after-trouble.

Of course, a really good negative, which will afford a brilliant paper print, will yield a good positive on glass. But if a negative is taken for the one purpose of reproduction as a lantern slide, it is better to check development slightly, so that the shadows shall not be veiled. Beach’s developer, as well as the ferrous oxalate method, secures this result, with the further advantages that there is no yellowness to stop the light, and the skies and high-lights are very black. This latter property secures clear glass in the positives.

Having secured a really good negative, the production of a first-class lantern slide is a matter of



comparative simplicity. A negative taken in the manner described, and which is of the same size as the lantern picture must be,  $3\frac{1}{4}$  by  $3\frac{1}{4}$  inches, can be reproduced by contact. This means that the negative can be shut up in an ordinary printing-frame, that the lantern plate can be placed in contact with it, and that the whole can be exposed to the action of light. But it need hardly be said that the time of exposure, instead of being measured by half-hours, as in the case of a paper print, is measured by seconds. The next question that arises is, What is the best plate to use for the purpose?

This is a very difficult question to answer off-hand, for lantern slide producers each seem to have their own particular views upon the subject. For the reproduction of simple line subjects, such as pen-and-ink drawings, or woodcuts, nothing can well beat the old wet process, for it gives a very opaque deposit. (This quality is against it for natural photographs, whose shadows in the lantern slide should possess some degree of transparency.) If this process be used for contact printing, the wet collodion surface must be defended from actual contact with the negative by pasting on the latter two narrow strips of paper, three inches apart, upon which the edges of the wet plate can rest.

Many workers advocate the use of collodio-bromide plates. Our valued contributor, Mr. Brooks, is one of them, and perhaps he will favour us some day with an article describing his method of working. Others, again, prefer albumen plates, and we may state our opinion at once, that good albumen transparencies are as beautiful as any that can be produced. But all these processes require that the photographer should make his own plates, and in this work-a-day-world few have time to do so. So that, when all is said and done, we must fall back upon some form of gelatine plate, and upon one which is easily procurable.

The choice lies between gelatino-bromide plates and gelatino-chloride plates. For simple contact-printing, the latter are by far the casier to work; they are useless, on account of their slowness, where a slide has to be reduced, by means of the camera, from a negative larger than itself. Nor do I advise the amateur to adopt them unless he can work by daylight, or is fortunately situated like one I know, who lives opposite to an enterprising tailor who displays an electric arc light in front of his door. For the chloride plate is most insensitive to yellow light, such as that afforded by gas. For this reason, most commercial makers advise that the light chosen should be that procured by burning an inch of magnesium wire at a distance of so many inches from the printing-frame. This advice is not difficult to follow, but it is very difficult to make two pieces of wire give out

exactly the same amount of light; for magnesium wire has a habit of dropping down in a languid manner under the influence of its own heat, and going out suddenly when it ought to shed its radiance abroad. With diffused daylight all is plain sailing. The negative, with its chloride plate in contact with it, is exposed, say, for three seconds to daylight, and is then dropped into the developer. Here is a good one, devised, if I remember rightly, by Mr. Edwards:—

A	{ Neutral potassic oxalate.....	2 ounces
	{ Sal ammoniac .....	40 grains
	{ Distilled water .....	1 pint
B	{ Iron sulphate .....	4 drachms
	{ Citric acid .....	2 „
	{ Alum .....	2 „
	{ Distilled water .....	1 pint

For use, pour a portion of B into an equal quantity of A.

If the operator is accustomed to the ferrous oxalate developer pure and simple, he will find that it will develop this description of plate, but it is better for being restrained with a few drops of a 10 per cent. solution of sodic citrate. Whether he use one or the other, let him be particularly careful in the matter of cleanliness of fingers. A hypo-defiled finger will spoil the developer instantly. To avoid this disaster—the potency of which I have learnt by sad experience—I have adopted the following method of working:—

I use a brilliant *yellow* light, so that I can work comfortably, for chloride plates are, as already stated, insensitive to yellow rays; the developing-tray stands in front of it, and at one side is placed a large tray filled with water, to which a little alum solution has been added. *Hypo is, for the present, banished from the scene altogether.* I expose my plate, and put it in the developing solution. In a few seconds the picture flashes out in the uncere- monious manner common to chloride plates. I hold it up to the light, look through it, and find that it is but a ghostly image after all. I expose another plate in the adjoining room, and put it by the one which is in course of development, and which by this time has most likely gained sufficient density. If it has, I wash it for a few seconds under the tap, and drop it into the alum tray; and so on, until perhaps a couple of dozen plates have been treated in the same way. I then light my gas-lamp, mix up a tray of fresh hypo, large enough to accom- modate half-a-dozen plates at a time, and proceed to fix my plates. They fix rapidly, and as fast as they are done, back they go into the weak alum solution, until, when the batch is finished, I pro- ceed to wash them. This I do by emptying away the alum-water, and giving many changes of plain water at intervals of ten minutes for an hour. I then rack the slides, and leave them to dry spontaneously.





THE TENNIS-PLAYER.

*(From a photograph by Byrne & Co., Richmond.)*







AMATEUR PHOTOGRAPHIC  
ASSOCIATION.

A COUNCIL MEETING of this society was held on the 10th inst., the Right Hon. the Lord de Ros in the chair. The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—H.S.H. the Duke of Teck, G.C.B.; John Egerton Falconer, Esq.; Miss Evelyn Holford; Arthur Wood, Esq.; Mrs. Morton Lucas; also the Hon. Slingsby Bethel. His Serene Highness the Duke of Teck, having graciously signified his assent, was elected a vice-president. The secretary was directed to call in the new negatives by Jan. 1, 1887, and it was decided that none should be received for competition later than Jan. 31. The secretary was also directed to inform the members that although the prints for competition will, when so desired, be printed by the secretary as heretofore, that members are advised, as being, on the whole, satisfactory, to send their own prints with their negatives, which will be returned, if applied for, at the close of the year.—A. J. MELHUSH, *Hon. Sec.*

MIDLAND COUNTIES' ART MUSEUM,  
NOTTINGHAM CASTLE.

WE have been requested to state that it is again intended to hold an exhibition of photographs, the third of the series, in one of the galleries of the Nottingham Museum, in February, 1887. The exhibition will open on Saturday, the 12th of February, 1887, and works will be received at the Castle between Monday, the 24th, and Saturday, the 29th of January. The following medals and certificates will be awarded:—

*Professional Work:* For landscape or seascape, or series of—One silver medal, one bronze medal, and one certificate. For portrait, or series of—One silver medal, one bronze medal, and one certificate. For subject picture, or series of—One silver medal, one bronze medal, and one certificate.

*Amateur Work:* For landscape or seascape, or series of—One silver medal, one bronze medal, and one certificate. For figure subject, or interior, or series of—One silver medal, one bronze medal, and one certificate. For architecture, interior and exterior, or series of—One silver medal, one bronze medal, and one certificate. In the adjudication, special regard will be taken of artistic qualities, and preference will be given to prints from untouched negatives.

Any further information respecting the exhibition can be obtained from Mr. George Harry Wallis, the director and curator of the museum.

## HOW TO BE A PHOTOGRAPHER.

BY JOSEPH HARRIS.



EACH succeeding day brings the photographic season nearer to a close—a time for the experienced man to reflect, a time for one who is still hesitating on his choice of a hobby to make up his mind for the coming year. And to each one of these classes a few words may not be out of place. Whether he be a skilled practitioner, whether he be one whose first plate has yet to be exposed, there will exist a state of uncertainty. A specific object is to be attained, and different books on the subject each advise a different course of treatment. Which one is right?

This train of thought is induced by perusal of a recent article in a journal advertised as “devoted” to the art of photography.

Some people have such a strange method of exhibiting this devotion, they will even counsel an absurdity. A typical case is suggested. These self-imposed instructors always resort to a typical case, where shadows are heavy or where something else is light, and this particular instance suggests that if a foreground be dense, heavy in undergrowth, dark in cast shadow, that—the amateur is to wait till near sunset, till the sun has gone well down in the horizon, before he attempt his picture.

If the beginner, in his anxiety to please, follow this counsel, he will succeed to perfection in securing a dimly-lighted subject, weak in its lights, poor in its shadows, even if correctly timed. To *wait* till the sun goes down suggests waiting till the *last* cloud has rolled by before commencing operations, and though with the dry plate we can afford to wait without fear of “oyster-shell” marks, as would result with the old wet process, there is a limit even to the endurance of a photographer, and no one in possession of the *remains* of his sanity would wait till sunset before he attempt his exposure, in the delusion that the great luminary will lighten the under portion of the shadow before him by kindly peeping under the leaves.

The unthinking may urge that, as the painter portrays a sunset, why not the photographer? The conditions of working are totally dissimilar. The painter has command over his *chiaroscuro*, the photographer has in *this instance* none. With the approaching sunset actinism ceases, and power over the subject has departed.

If there be such a feature as a heavy mass of dark in the foreground of the picture, expose for that shadow: give it time, and study the general effect in development of the negative. Do not work with the sun *to the rear* of the camera, as a



writer suggests, or a miserably flat picture must be the result.

To be a photographer, it is impossible to lay down certain rules, and to dogmatise that by adherence to this or that particular method of procedure a perfect negative shall be produced. The writing of articles at per yard is one thing; the imparting of useful knowledge to a stranger whose requirements are unknown to the writer is a totally different matter.

This assertion does not infer that the usual photographic manipulations have not to be learned, and learned thoroughly; but, this done, to be a photographer—go to Nature!

If the amateur cannot see for himself the amount of light and shade he desires in his picture; if he cannot see for himself the most effective method of lighting that picture, whether the illumination shall come from right or left, all the writing in the world will never make him see it. All he will ever do will be to expose the plates prepared for him, and trust to chance if he make a picture.

Is a sculptor produced by placing the human anatomy into a mill, and turning a handle till the aforesaid anatomy comes out at another end empowered to fashion a subject in marble or clay?

And in like manner the photographer is not to be manufactured by a perusal of manuals, by the reading of articles, or by the suggestions of theorists who give advice gratis for the sake of notoriety.

Study the camera each one for himself, and by its aid reproduce in monochrome the diversified tints observable in nature. Cast to the winds the discussions of the paper-mongers, and, when manipulation be perfect, pourtray nature. Study the same subject at different hours, and note the varied effect.

Always bear in mind that the true photographer, like the true artist in colours, in stone, in tone, is not to be made. The man must be gifted to see the beautiful in nature for himself. No books, no articles, no instruction will create him; but by practice he may discover the things to be avoided, the points to be made the most of. And this intuition will beget aptitude for seizing the salient points of a subject, so making the photograph while the mere theorist is calculating time according to the laws of conjugate foci, forgetting the fact that each particular subject requires a treatment and an exposure of its own. A photographer looks, not to his fractions, but to the picture before him.

One of the guides to the bewilderment of the amateur characteristically advises that in portraiture it is a mistake to talk too much to the sitter. The man who cannot talk is not a good

observer of human nature, and the man who is not a good observer of human nature cannot be trusted to take a satisfactory portrait. The wooden-headed, Dutch-doll stage of face is not the desideratum of *every* amateur. He will, in nine cases out of ten, desire to reflect somewhat of the inner life, of the mind, of the *anima*, in his subject, and to effect this he will converse on every conceivable theme, from the Salvation Army to the Divorce Court, till he find the subject likely to draw out the model; to make him feel himself, to prevent him falling into a mass of inanimate humanity, a “perfectly still” piece of anatomy obedient to the mechanical call of the photographer. This latter style may suit the herd who favour and appreciate a map-like representation of a face, with eyes, nose, and mouth sharply defined as a mud-bank on an ordnance survey. But the artist requires a higher order of delineation; he desires some indication of intellect in the expression of the model, and he will not cease endeavour to rouse, to wake up that intellect by discourse till his object be attained, till the emotional flow be enkindled in the face which it is his mission to pourtray. So, when about to take a portrait, talk, talk incessantly, that the sitter shall not realise his share in the performance till the action has been completed. And do not, as advised by the “devoted” journalist, attempt the construction of a home-made head-rest out of the remains of a domestic broom-handle or a disused gas-pipe. The editorial “we” may cover a multiplicity of errors, but its wings are still young, its pinions cannot be sufficiently extended to hide the glaring inconsistency of *that* mistake.

If the amateur require a head-rest—and if he attempt portraiture, he will want one desperately—let him purchase in the regular manner; the instrument, to be of the slightest use, must be reliable, and unless the amateur photographer be likewise a competent amateur smith, he will scarcely be skilful enough to turn out a piece of mechanism which will not “wobble” at the critical moment. Was it not little Robson who used to be discovered on the stage with a lady in his arms when prudence would have dictated her holding aloof from such a position, and did not the actor exclaim in response to her hysterical and somewhat erratic movements, “If you love me, don’t wobble”? If the amateur attempt a home-made head-rest he will have good cause every time he uses it to remember little Robson!

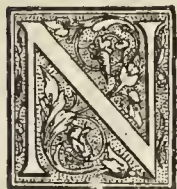
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THE CAMERA (price 6d.) is ready for issue to the public on the 1st of each month. The Publisher will feel obliged for information of any difficulty that may be experienced in obtaining the magazine regularly.



## ALGERIA AND TUNIS AS A FIELD FOR PHOTOGRAPHY.

BY W. H. BARBROOK.



OW that those who have leisure and the means to enjoy it are casting about for a refuge from the fog and cold of the coming winter, it may not be amiss to devote one or two articles to the question of the advisability of selecting these delightful countries as a home for two or three months during the dreary period of an English year.

The writer left England in January ; but any period between the beginning of November and the end of February would do equally well. During this time, the climate is usually magnificent. I experienced at my visit bright, genial sun all day and every day, like a perfect English summer day, and frost and snow are unknown. Occasionally, just as the sun goes down, the air may be a little chilly for half-an-hour or so, rendering a light overcoat desirable ; but it soon becomes warm again, and the remainder of the evening is usually balmy and pleasant.

To the advanced amateur, the man who has exalted photography to a fine art—and there are many such, as is evidenced by their productions exhibited in the recent exhibitions—I dare offer no suggestions beyond the bare record of the scenes and opportunities which will be afforded to him by a visit to these countries ; but, to the great body of amateurs who, like myself, carry a camera solely as an adjunct to a tour, and a means of passing many pleasant hours, a few words as to what to take and what to leave at home will not be out of place. Those who do not intend to travel very rapidly, and to whom weight is not a great objection, should take a camera not smaller than  $7\frac{1}{2}$  by 5. No difficulty will be experienced in passing the dry plates through the Custom House. The officials have long ago been accustomed to them ; in fact, some of the most perfect photographs to be seen in any city in the world are exposed for sale in the stationers' shops of Algiers. If it is considered desirable to develop *en route*, at most of the hotels water will be found on the upper floors, and frequently housemaid's sinks, or rather houseman's, for a female servant in Algiers is unknown. A foot-bath can always be obtained for the waste, and, with a home-made folding cardboard screen of red material for the candle, the operation can be conducted with comfort. Much difference of opinion, I know, exists about developing as you go along, but I prefer it. It is so much more satisfactory to know your exposure is right and your plates what they should be. This year, while travelling

in Norway, I could not develop without washing in some mountain torrents, and, finding this difficult, I waited until my return, with the result that nearly all my plates were over-exposed.

Then, as to the route. The Transatlantique Company of France issue circular tickets from London, and, if the desire is to visit Tunis as well, and return home by either Spain or Italy, advantage should be taken of them, as there is a saving of something like thirty per cent. by their use. There are about eight or ten different routes to select from. The traveller usually strikes Algiers, and works round home either by Constantine, Tunis, Malta, or Italy ; or by Oran, Tangiers, Gibraltar, Spain, and Paris. The journey must be completed in three months or less. Whichever route is selected, Paris is the starting-point, and you make direct for Marseilles. It is quite possible to leave Charing Cross on Friday morning, and find yourself at anchor in the Bay of Algiers on Sunday at midnight ; and the journey could be performed in this time with comfort and without fatigue. The traveller, however, with a camera will find plenty of subjects and much to interest him if he takes his time on the journey ; and Lyons, Avignon, and Marseilles will be desirable places at which to spend a few hours, or even days.

The steamers leave Marseilles about five o'clock in the afternoon. They are well appointed and comfortable, and those who are able to enjoy the liberal fare provided will appreciate it thoroughly. Unfortunately, the gulf of Lyons has rather a bad name for its choppy seas, and if any one is ill it will generally be during the first part of the voyage. The next morning the islands of Minorca and Majorca will be passed, and late in the evening, or early in the morning, Algiers will be reached. The view of the city from the sea is superbly grand. It rises from the sea on a hill five hundred feet high, the apex of which is the Casbah. What tales of misery and wretchedness could not its walls disclose of the tortures endured by its inmates during the sway of the piratical Deys ! There will be little to interest the photographer in the modern French city, which consists of houses in the Parisian style built along the sea-front ; but a few steps out of either of the principal streets, Bab-el-Ouad and Bab-azoun, bring him into another world altogether ; a scene so peculiar and delightful will meet his eye that if he has never before seen anything of Eastern life, he may be excused if he hesitate at first venturing his presence among the crowd of swarthy and, in some cases, scowling faces which he sees before him. The old Moorish city consists of winding lanes, with square, flat-roofed houses on either side with no windows ; this gives them a sombre appearance ; but the interiors are generally richly decorated. It is almost impossible to find



your way about the maze of courts and alleys, but it is equally impossible to lose yourself, for if you keep ascending you must find yourself at the Casbah, and if you keep descending you must reach the modern town. In no city we know of is there a greater wealth of subjects for the camera than here; in the courts and alleys, as we

activity, with the magnificent mosque of Djamäa-el-Djdid as a background.

There is one difficulty, however; the photographer has to encounter the inveterate dislike of the true Mohammedan to be photographed. To have his figure drawn, or his image brought on to paper, is contrary to one of the tenets of his re-



A Barber's Shop in Algiers.

should call them, there is an ever-changing scene of Moorish life, mixed with denizens of every nation, Arabs, Jews, French, Maltese, Spaniards; and although it is somewhat difficult to get an instantaneous shot in these narrow lanes, there will be no difficulty in getting any number from the Place du Gouvernement, the great centre of

ligion, and he will resort to any artifice to escape from it. I was wandering one morning here and there in search of subjects, when I saw a swarthy Arab sitting on a mound having his head shaved. Thinking this a favourable opportunity for a shot, I planted my camera, and was in the act of focussing when my movements caught the eye of



the victim, and up he jumped, to the consternation of the Arab with the razor, and, stamping furiously in a frenzy of passion, was about to make for me, when I beat an ignominious retreat. On another occasion, accompanied by my little ragged Arab boy, who carried my impedimenta, and who entered thoroughly into my schemes for getting a surreptitious shot at his countrymen, we were in one of the cemeteries, and spied a group of veiled women seeking spiritual consolation from an itinerant Marabout. I succeeded in getting the subject before I was discovered, when my Arab boy rushed up to the women and, dancing wildly round them, told them what had been done. There is a

are no such restrictions. Days may be spent with pleasure in securing characteristic bits out of this Arab quarter, alive as it is with its bright costumes and ever-changing life. The Moorish cafés, filled with Arabs sitting cross-legged on boards, sipping their coffee, the numerous barbers' shops, the makers of Arab shoes, the working jewellers, will afford never-ending amusement to a stranger, all the operations being conducted almost in the open air. One great charm of the whole thing is that a moderate acquaintance with French will put you on speaking terms with most of the Arab population, and civility with grave politeness will be experienced from all. If the opportunity is



A Dancing Girl.

spice of excitement in photographing under such circumstances.

Talking of the cemeteries, many quaint and characteristic pictures may be obtained from them with care and diplomacy. The Arab women, closely veiled, are for the most part kept rigidly within walls, but on Friday they are allowed to visit the cemeteries. It is a curious sight to see a party of eight or so sitting on the top of a grave enclosed by a high iron railing, laughing, chattering and enjoying themselves over the late lamented. Infidels are not admitted to some of these cemeteries, but the one by the Casbah is unenclosed, and there

afforded of attending one of the fanatical meetings of the black population, which take place occasionally on the sea-shore, it should on no account be missed. The rites consist in the sacrificial offering of fowls, with weird and ghastly accessories. The fixtures can be ascertained by a little diligent inquiry. Then there are the fanatical dances of the Aissaoui, which sometimes take place in the native quarter, accompanied by the beating of drums, the yells of the spectators, and frightful contortions and exertions of the dancers, which continue until they fall down utterly exhausted. In some of the winding lanes of



the Moorish city the sound of music and dancing may be heard, and unveiled women, some of them very beautiful, may be seen dancing, or basking in the sun, dressed in the brightest of colour. The suburbs of the city also will give the photographer many beautiful pictures. The Mosque of Sidi Abd-er-Rahman makes a magnificent picture, and an interesting one into the bargain, for, with the exception of one near Biskra, it is the oldest place of worship in Algeria. The camels coming in with their loads, the houses peeping from out the date-palms, will afford many charming bits; while those who care for foliage will find any quantity of subjects in the Jardin d'Essai.

But, in time, Algiers, with its many subjects for the camera, will have become exhausted, and the amateur will be seeking fresh fields and pastures new. There are charming excursions to be made in the interior. One, perhaps, is more beautiful than the others—certainly it is the most popular—and that one is to Blidah. It can be performed comfortably by railway in a day, and the journey there, through the groves of orange and lemon trees, is delightful. From Blidah a carriage journey may be taken—and, indeed, should on no account be missed—to the Ruisseau des Singes. The road passes through the lovely wooded gorge of the Chiffa Pass, the home of the monkey in its wild state. Occasionally the traveller is fortunate enough to see groups of them coming down to drink in the stream, but if he is not lucky enough for that he will be sure, if he have a keen eye, to see them jumping about amongst the trees of the thickly-wooded mountain-side. On the way back to Algiers, after sunset, he will probably hear, all along the course of the line, the veriest babel, caused by the croaking of frogs.

*(To be continued.)*

## PICTURESQUE PORTRAITURE.

BY G. G. MITCHELL.



THE photographic convention at Derby a paper was read by Mr. W. Adcock, on "Men's Heads." It contains some excellent and suggestive remarks bearing upon the abuse of retouching, and a plea for larger heads in portraiture. The writer says: "I am a mere amateur," but that is of small consequence, since both amateurs and professionals alike write both good sense and some nonsense, in about equal proportions between them.

Where an amateur may more easily make a mistake is in matters of a practical kind, which he has perhaps merely touched, and runs off too hastily to discourse upon; whereas, had he

worked and waited a little longer he would have known something else, or different. Mr. Adcock points to a real evil when he deprecates the over-worked state of much of the portraiture of the present day. It is an evil which the very producers themselves acknowledge. It is detrimental to the highest class of work, and weakening to real artistic effect; but worst of all, it interferes with, if not altogether destroys, truth to nature, and the representation of character and feeling, which ought to take a first place in the pictorial delineation of the human face. This, of course, is said in reference to extreme retouching, where all character and expression is modelled off the face of the subject in favour of an all-over smooth prettiness of finish.

The professional man is, no doubt, art and part in all this; but he is much to be sympathised with. He is not in business for the sole object of advancing true art, so far as it lies to his hand. He commonly enters upon a photographic career in order to make a living for himself and family, and he feels strongly impressed that unless he sells the goods which popular taste demands, he will come speedily to grief. The wishes of his sitters naturally influence very much the work he produces. The case is not a singular one. If a hat-manufacturer, say, were to refuse to turn out some extraordinary styles which the popular whim demanded, he would take a back seat in the market; and so on with other things. If a photographer is above the popular wish, his case is no rule for the mass. At the same time, a man may do the best he can to raise the popular taste, both by precept and example. If any one thinks he cannot conscientiously give away highly-worked-upon photographs, he must just risk the experiment of refusing to do it. I wish him well. But photographing, as at present known and practised, I affirm, cannot do without a reasonable degree of retouching, in spite of Mr. Adcock, when he says:—

"I suggest five-inch direct heads—strongly, not delicately, lighted—with every scar and wrinkle left on them. A negative, a retoucher is never allowed to see; a print, naught beyond a mere spotter is ever allowed to handle. Rough, rugged, demonstrative, truth-telling photography!" And again: "More abrupt lighting, more vigour, more character." What is here desiderated is evident enough, and it is just and good; but it cannot be got, I am afraid, as he proposes: and when he advises, "*for a change*, under-expose and over-develop, you will get a Spagnoletto." So you will. I have often got them, but question if that master himself would take kindly to them if it were possible for him to see them. A "Spagnoletto" portrait of this sort certainly contains all the scars and wrinkles a man possesses, but not exactly as he owns them, and therein lies the



grand difference. The photograph, pure and simple, of a five-inch head, forceful in character—let us say of Carlyle, or Longfellow, or Lincoln—is, no doubt, “rough, rugged, demonstrative,” but I strongly doubt that it will be altogether “truth-telling,” and for this reason. Photography, especially in such subjects—let alone under-exposure—almost invariably exaggerates the shadows and hardens the high lights. The subject has hardness and shadow enough in itself, without taking special means to increase them. Photographers have tried many devices in order to get softness in the negative in cases like this, such as taking the picture through a veil of net, moving the lens, and so on, with more or less success; but the main help should come from proper lighting and exposure—*under-exposure* is *not* the direction in which to look for it. An under-exposed picture is known at once. Did ever any one see an example of it which was thought beautiful? I doubt it very much. If competent judges pronounce a photograph beautiful, it is not under-exposed. This is one of the things it is needless to try, because the common experience is ample and convincing. “Spagnolettos” are made every day and put aside as often. They are never worth the paper they are printed upon, and the reason is obvious;—shadow is not valuable unless it is really shadow, and not merely blackness without gradations or detail of any kind. An under-exposed negative offers this in varying degree. It gives blackness or smudge where shadow should be, and no over-development will put in what never existed upon the plate. The likelihood is that it will offer you fog instead. To print an average negative deeply is an infinitely more hopeful expedient than to under-expose and over-develop. The chances are that, in an ordinary negative, unless the lighting has been of the most fortuitous kind, the deepest shadows will be a little stronger than is desired, or than they are in nature. Here the re-toucher may do much to bring matters equal. And why not? Why should hand-work on the negative be necessarily less legitimate than hand-work on the canvas? The large head is seldom a true and perfect representation of the original. Too high in light here, too deep in shadow there, wrinkles and defects much intensified, and texture very coarse. It is the re-toucher’s art to bring the work up to nature’s value. If he botches the picture instead, that is the botcher’s fault. Re-touching in itself is not a sin.

I heard an R.S.A. once exhort a society of photographers not to re-touch at all, and when it was protested that photographs, as they existed, could not do without some help, he replied, “then make photographs that will not require it.” Just so, gentlemen! Let us straightway make them.

## TELESCOPES AND TELESCOPIC WORK.

BY W. F. DENNING, F.R.A.S.



THE following article, which we extract from the “Journal of the Liverpool Astronomical Society,” will be of much interest to those of our readers who are thinking of purchasing a telescope:—

The subject of the choice of telescopes has exercised every astronomer more or less, and the question as to the best form of instrument is one which has occasioned endless controversy. The decision is an important one to amateurs, who at the outset of their observing careers require the most efficient instruments obtainable at reasonable cost. It is useless applying to scientific friends, who, influenced by different tastes, will give an amount of contradictory advice that will be very perplexing. Some invariably recommend a small refractor and unjustly disparage reflectors, as not only unfitted for very delicate work, but as constantly needing re-adjustment and re-silvering.\*

Others will advise a moderate-sized reflector as affording wonderfully fine views of the moon and planets. The question of cost is greatly in favour of the latter construction, and, all things considered, it may claim an unquestionable advantage. A man who has decided to expend a small sum for the purpose, not merely of gratifying his curiosity, but of doing really serviceable work, must adopt the reflector, because refractors of, say, five inches and upwards are far too costly, and become enormously expensive as the diameter increases. This is not the case with reflectors; they come within the reach of all, and may indeed be constructed by the observer himself with a little patience and ingenuity.

The relative merits of refractors and reflectors have been so frequently compared and discussed, that we have no desire to re-open the question here. These comparisons have been rarely free from bias, or sufficiently complete to afford really conclusive evidence either way. There is no doubt that each form of instrument possesses its special advantages. It has long been proved that refractors and reflectors alike are, in good hands, capable of producing equally good results; and we may depend upon it that, in spite of all the arguments and experiments, both kinds of telescope will continue to hold their own until superseded by a new combination, which hardly seems likely. If the observer is free from prejudice, he will have no cause to deplore the character of his instrument, always supposing it to be by a good maker. Be it object-glass or speculum, he will rarely find

\* My 10-inch reflector by With was persistently used for four years without being re-silvered or once getting out of adjustment.



it lacking in effectiveness. It happens only too often that the telescope or the atmosphere is hastily blamed when the fault rests with the observer himself. Let him be persistent in waiting opportunities, and let the instrument be nicely adjusted and in good condition, and in the great majority of cases it will perform all that can reasonably be expected of it.

In choosing appliances for observational purposes, the observer will, of course, be guided by his means and requirements. If his inclination lead him to enter a particular department of research, he will take care to provide himself with such instruments as are specially applicable to the work in hand. Modern opticians have effected so many improvements, and brought out so many special aids to smooth the way of observers, that it matters little in which direction he advances, he will scarcely find his progress impeded by want of suitable apparatus. In size, as also in character, the observer should be careful to discriminate as to what is really essential. Large instruments and high powers are not necessary to show what can be sufficiently well seen in a small telescope with moderate power. Of course, there is nothing like experience in such matters, and practice soon renders one more or less proficient in applying the best available means.

If the intending observer merely requires a telescope to exhibit glimpses of the wonders which he has seen portrayed in books, and has no intention of pursuing the subject further than as an occasional hobby, he will do well to purchase a small refractor between 3 and 4 inches aperture. Such instruments are extremely effective on the sun and moon, which are naturally the chief objects to attract attention, and, apart from that, instruments of the sort alluded to may be conveniently used from an open window. The latter is an important consideration to many persons; moreover, a small telescope of this kind will reveal an astonishing number of interesting objects in connection with the planets, comets, &c., and it may be employed by way of diversion upon terrestrial landscape, as such instruments are almost invariably provided with non-inverting eye-pieces. Out-of-door observing is inconvenient in many respects, and those who procure a telescope merely to find a little recreation, will soon acknowledge a small refractor is eminently adapted to their purposes and conveniences.

Those who meditate going further afield, and taking up observation habitually as a means of acquiring practical knowledge, and possibly of doing original work, will essentially need different means. They will require reflectors of about eight or ten inches aperture, and if mounted in the open on solid ground, so much the better, as there will

be a more commanding view, and a freedom from heated currents, which renders an apartment unsuited to observations, unless with small apertures where the effects are scarcely appreciable. A reflector of the diameter mentioned will command sufficient grasp to exhibit the more delicate features of planetary markings, and will show many other difficult objects in which the sky abounds. If the observer be specially interested in the surface configuration of Mars and Jupiter, he will find a reflector a remarkably efficient instrument. On the moon and planets it is admitted that its performance is equal to refractors of the same aperture. If, however, the inclination of the observer leads him in the direction of double stars, their discovery and measurement, he will perhaps find a refractor more to be depended upon, though there is no reason why a well-mounted reflector should not be successfully employed in this branch; and the cost of a refractor of the size to be really useful as an instrument of discovery must be something very considerable—perhaps ten times as great as that of a reflector of equal capacity.

Too much care cannot be given to the mounting of telescopes, for the most perfectly figured glass will be rendered useless by an inefficient stand; a faulty lens, if thoroughly well mounted, will do more than a really good one on a shaky or unmanageable mounting. Whatever form is adopted, the arrangement should ensure the utmost steadiness, combined with every facility for readily following objects. A man who has every now and then to undergo a great physical exertion in bodily shifting the instrument is rendered unfit for delicate work. The telescope should be provided with every requisite for carrying on prolonged work with slight exertion on the part of the observer. Unless the stand is firm there will be persistent vibrations, especially if the instrument is erected in the open, for there are very few nights in the year when the air is quite calm. These contingencies should be provided against with scrupulous attention if the observer would render his telescope most effective for the display of its powers, and avoid the constant annoyance that must otherwise follow. Good eye-pieces are absolutely essential. Many object-glasses and specula have been deprecated for errors really originated by the eye-piece. Again, telescopes have not infrequently been blamed for failures through want of discrimination in applying suitable powers. A consistent adaptation of powers according to the aperture of the telescope, the character of the object, the nature of the observation, and the atmospheric conditions prevailing at the time, is necessary to ensure the best results. If it is required to exhibit a general view of Jupiter and his satellites to a friend, we must utilise a



low power with a large field ; if, on the other hand, we desire to show the red spot and its configuration in detail, we must apply the highest power that is satisfactorily available. Telescopes are sometimes stated to bear 100 to the inch on planets, but this is far beyond their capacities, even in the very best condition of air. Amateurs soon find from experience that it is best to employ those powers which afford the clearest and most comprehensive views of the particular objects under scrutiny. Of course, when abnormally high powers are mentioned in connection with an observation, they have an impressive sound, but this is all, for they are practically useless for ordinary work. I find that 40, or at the utmost 50, to the inch, is ample, and generally beyond the capacities of my 10-inch reflector. A great advantage, both in light and definition, results from the employment of a single lens as eye-piece. True, the field is very limited, and the object so greatly distorted near the edges, that it must be kept near the centre, but on the whole, the superiority is most evident. By many careful trials I find it possible to glimpse far more detail in planetary markings than with the ordinary eye-piece.

For general purposes I believe three eye-pieces are all that is absolutely requisite—viz., a lower power with large field for sweeping up comets, clusters, &c. ; a moderate power for viewing the moon and planets ; and a high power for double stars and the more delicate forms on the planets. For a 3-inch refractor, eye-pieces of about 15, 75, and 150 would be best, and for a 10-inch reflector 40, 150, and 300. The definition usually suffers so much under high powers, and the undulations of the atmosphere are brought out so conspicuously, that the greater expansion of the image does not enable it to present more observable detail. The features appear diluted and merged in hazy outlines, and there is a lack of the bright, sharply determinate forms so steadily recognised under low magnifiers. In special cases great power may become essential, and, under certain favourable circumstances, will prove really serviceable ; but, in a general way, it is admitted that the lowest power which shows an object well is also the best. I have occasionally obtained very fair views of Saturn with a power of 865, but find that I can grasp more of the detail with 252. Some daylight observations of Venus were also effected here under very high power, and though the definition remained tolerably good, I found as the result of careful comparison that less power answered more satisfactorily. But it would be absurd to lay down hard and fast rules in such cases. Special instruments, objects, and circumstances require special powers, and observers may always determine with a little care and experience the most eligible means to support their endeavours.

## Reviews.

—o—

*The Art of Retouching Photographic Negatives.* By ROBERT JOHNSON. (Marion & Co., Soho-square, London.)



HIS book, written by one who has had many years' experience in the best studios, is a work which will be useful to many, and is one that fulfils a great want. To the amateur especially, who is, as a rule, compelled to gather his knowledge from periodicals, this manual will be valuable, for it comprises in its pages all that has been written about retouching in independent articles, and a great deal of matter besides. For it includes chapters upon colour, water and oil colouring, finishing photographs in crayons, and working up carbon enlargements in monochrome. One has the pleasure in reading this volume of feeling that the writer knows his subject. He does not give long quotations from other men's writings, but depends upon his own experience for the observations which he makes. Nor is the space at his disposal unnecessarily wasted with wordy description ; he says what he has to say in a plain, straightforward way, and in a manner that no one can fail to understand. The chapters upon texture, handling, and modelling are most excellent, and the directions given are much helped by the well-drawn heads (lithographs), which are the work of the author. The only chapter to which we should feel inclined to take exception is that upon the eye, for the reason that we consider that the eye should never be touched by the pencil at all. We are also of opinion that the portions of the book dealing with landscape photography might be dispensed with. A landscape negative that requires retouching will not be worth much, and will probably, from an artistic point of view, be worth still less after the operation. We recommend this book to amateurs and others with every confidence that they will learn much that is useful from its pages. We may add that the work is well printed on good paper, but the absence of an index is a mistake that should be remedied in the next edition.

*La Photographie sans Objectif.* Par R. COLSON. (Gauthier-Villars, Paris, 1887.)

THE publication of a work advocating the prosecution of the art of photography without a lens seems a rather retrograde step. But the author of this work pleads that the plan has several advantages, and that by the use of a pinhole in lieu of a lens three remarkable properties can be secured in one's pictures which are found wanting in most lenses. Firstly, the pinhole causes all objects to be in perfect focus, whatever their distance from the sensitive plate. Secondly, an unusually large field is secured ; and, thirdly, the images are quite free from distortion, and are determined with geometrical precision. Further, the method combines with this rigid exactness great softness, and confers upon the prints obtained the seal of artistic excellence. It is with regret that we feel bound to point out that these high qualities are not observable in the photograph which forms the frontispiece of this little book. The picture is certainly well proportioned,



but it has the woolly appearance of one very much out of focus. This is due, no doubt, to the employment of an aperture which was too large. We happen to have in our possession a pinhole picture which has all the exquisite sharpness of a photograph taken with a good lens. We, therefore, can uphold the statements of M. Colson, as well as condemn the faulty picture by which he endeavours to prove their truth. For this pinhole work, he recommends a box or camera, fitted at one end with a plate of zinc or copper one-fifth of a millimètre in thickness. This should be pierced with a bevelled hole, with clean edges, measuring from three-tenths to five-tenths of a millimètre in diameter. The diameter of the hole should vary with its distance from the sensitive plate upon which the image is received.

*Traité Pratique de Photographie Décorative Appliquée aux Arts Industriels.* Par V. ROUX. (Gauthier-Villars, Paris, 1887.)

THIS useful little manual, after giving in the first chapters a brief account of the method of producing negatives by the wet collodion and more modern methods, proceeds to point out how such negatives can be applied to decorative work generally. More especially does it dwell upon the application of photography to vitrifiable pictures on porcelain, glass, enamels, and crockery. A useful list of enamel colours and their composition is given; but, at the same time, the author tells us that the colour manufacture is now carried on commercially with such perfect results that it is much better to buy than attempt to make one's tints. A chapter is devoted to the powder-process and its application to burnt-in photographs; and another one deals with photogravure, and the general production of metallic reliefs, the basis of which is a film composed of bitumen of Judea dissolved in benzine. The book is a valuable addition to the library of the experimental worker, and contains, like the manual reviewed above, a useful list of books on photography which are issued by the same publishers.

#### NOTTINGHAM ARTS SOCIETY.

THE second meeting of the present session of the Nottingham Arts Society was recently held at the Castle Museum, when a very interesting and instructive lecture was delivered on "The Application of Photography," by Mr. T. C. Hepworth, F.C.S. The lecturer dealt with the application of photographs to newspaper illustration, and explained how Mr. Melton Prior's pictures of the recent war in the Soudan were reproduced in the *Illustrated London News*. He also explained the uses of photography in connection with the work of the microscope and the telescope; and in illustration of history, archæology, and other branches of science and art. His lecture was illustrated with photographic slides, shown by the oxy-hydrogen light. At the close of the lecture, Mr. Hepworth exhibited a number of photographs taken by Mr. Bourne, the president of the Nottingham Society of Artists, principally in the neighbourhood of Nottingham. Mr. Hepworth was cordially thanked for his lecture at its conclusion.—*Nottingham Daily News*.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

—o—

M. J. H.—We beg to thank you for your appreciative remarks concerning the CAMERA, and will proceed to answer your queries *seriatim*. 1. Intensification is a risky proceeding with a good negative, such as we judge yours to be from the print sent. You can lighten the faces by dabbing them on the glass side of the negative with a little crimson lake (water-colour) previously smeared on the finger. 2. Why use boiling-water to weaken your prints? there is no object or sense in doing so. The fading of prints is nearly always due to the mount or mountant. 3. We know nothing of the eliminator which you mention. 4. This question we are unable to answer, but we fancy that trade jealousy among certain firms may possibly have influenced the matter.

W. S. WORNER.—The dimensions of the studio you refer to were 20 ft. by 15 ft. You must be guided by the lens which you intend using, for it is evident that while one of short focus will allow a near approach to the object photographed, another may require double that distance.

LONSDALE.—A negative fit for zinco work can easily be made from a line drawing executed in indian ink on white cardboard. The old wet process gives a better negative for this purpose than will a gelatine plate. We cannot afford space to describe the various operations in detail, but must refer you to two books upon the subject which we have lately reviewed, namely, "Photo-Engraving," Wilkinson, published by Messrs. England, and a manual of "Zincography," published at the office of this magazine.

B. A. O.—Tone with a solution of gold very much weaker than you would use for a paper "print." If you prefer a blacker tone you can use platinum bichloride, one grain to four ounces of water. Wood engravings are much better for this class of work than those on steel.

PHOTO-ELECTRIC.—You are under a mistake; the printing in Pain's telegraph was not photographic, but was brought about by electro-chemical means. Briefly, it was as follows:—Paper soaked in a solution of ferrocyanide of potassium and nitrate of ammonium rested on a zinc plate in connection with the Z pole of a Daniel battery. A copper pin rested on the paper, and was in connection with the other pole of the battery.

A. H. D.—The particular make of plates which you are using is evidently not suited for the developer mentioned. The terms "Isochromatic" and "Orthochromatic" express the same idea, the first-named meaning "equal colour," and the last "right colour." Neither word is quite satisfactory, but it is very difficult to suggest a substitute.

#### NOTICE.

Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.

All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.



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## Sayings and Doings.

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THE sale of ready-sensitized albumenised paper is a boon which was quite unknown a few years ago, when therefore each worker had to prepare his own. With all the undoubted conveniences of the present plan, it has some disadvantages, the principal one of which is that on certain commercial papers it is very difficult to get a satisfactory tone. It is a common complaint with amateurs that they find no difficulty in photographic operations, except when they have to tone. Let such complainers try the experiment of sensitising their own paper, and they will be astonished at the results which they will then be able to secure. The work is tiresome and messy, but it is by no means difficult.

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THE difficulty to which we have just alluded would be greatly obviated if the different vendors—or, rather, the preparers—of sensitised paper would publish the toning formula from which the best effects could be gained. Most certainly, one bath will not do for all. We recently printed some proofs on two different makes of ready-sensitised paper, and sent them all to be toned and fixed by a professional man—a well-known printer to the trade. Half of these were returned to us of a fine purple colour, and the rest were brick-red. It is evident that the borax bath, which this worker used, was quite unsuited to the process by which part of this paper was sensitised, while it thoroughly agreed with the formula which had been used for the remainder.

It seems but the other day that the Camera Club was established, but its growth from infancy to vigorous manhood has been quite phenomenal. Like scientific societies which have been founded many decades ago, the Camera is issuing its "Proceedings," in the form of a monthly pamphlet. The objects of this new departure are fully explained in an introductory article, and from this we extract the following paragraph:—"It is not intended in any way to compete with the existing photographic serials. Much of the contents will not concern or interest the general public, and the circulation of the paper will be confined to members of the Club, with the exception only of such copies as may be sent to other clubs and societies in exchange for their own publications."

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THE first issue of the "Proceedings" is full of promise for the future. It not only contains club notices and events which are of interest to members only, but it comprises papers read before the Club; discussions following those papers, and criticisms by those whose absence prevented them joining in the discussions. There is also some space devoted to general correspondence, and the wants of members in the way of private sale or exchange of apparatus.

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WE borrow the following hints about winter portraiture from a recent issue of the *British Journal of Photography*. They show how by the exercise of a little ingenuity it is possible to step out of the beaten track even in such a well-trodden road as portraiture. An old, "seedy" background may soon be touched up with whiting and weak size so as to represent a snow-clad waste. The



shadows may at the same time be softened by the same mixture tempered with lamp-black. Imitation steps, balustrades, &c., may have pieces of sheet-wadding and cotton wool stuck upon them, while the floor can be covered with the same fleecy material. A lady well muffled up in furs, taken amid such surroundings, will form a pretty picture, especially if she carry in her hand a pair of skates.

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THE generally dry records of the Patents Office not unfrequently afford specimens of very ludicrous ideas, but it would hardly seem possible that out of photographic apparatus anything but the severely practical could be squeezed. This is not so, as may be proved by reference to a specification recently published by a gentleman in the Isle of Man. The arms of that tight little island—we may remind our readers—consists of three human legs, each bent at the knee as in the act of kicking, and having a common centre. Now for the specification.

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THE patentee says :—"This invention is designed to enable the person photographed to resemble the arms of the Isle of Man. It consists in a light artificial leg made to any required size, bent or straight, or with adjustable joint or joints, and to be attached to the person so as to appear to be a third leg. The end next the body is provided with straps and a joint close to the body or soft air-cushion, or both, so as to fit it in any required position to the body. It must be dressed with trousers, knickerbockers, stocking, sock, legging, shoe, or boot to correspond with the dress of the wearer, and can be fitted with spurs or not, as desired. It is preferably made of papier-mâché, cork, tin, pasteboard, or inflated rubber-cloth. To enable two of the legs to rest clear of the ground, I prefer to let the real leg, at least, or both, to rest on fine wire suspended from above."

+ + +

LET us hasten to commend this valuable invention to those professional beauties whose forms have been photographed in every conceivable attitude. We have seen back views, front views, side elevations of them. We have seen them in swings, at the mast-heads of ships, in boats, behind screens, fans, and feathers, but never with more than the correct complement of limbs. The arms—or, rather, the legs—of the Isle of Man open up a wide field of possibilities in the direction of novel pictures.

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THE CAMERA (*price 6d.*) is ready for issue to the public on the 1st of each month. The Publishers will feel obliged for information of any difficulty that may be experienced in obtaining the magazine regularly.

## A DAY OUT.

BY JOSEPH HARRIS.



POSSESSED of his camera, the natural sequence of things ensues that the possessor will become anxious to take it out, and, having taken it out, the query, full of doubt, suggests itself, What will he do with it?

Some of the universal knowledge diffusers go the length of advising the student how to take views—conjured up by the vivid imagination of the writers ; but how to direct the photographing of an imaginary scene passes comprehension. Photography is not a matter of line and rule, of grains and ounces, of theories and typical cases. If a man cannot see for himself the beautiful in nature, all the babbling of the bookmakers will never make him see it.

It is simple enough to discourse sagaciously and dogmatically on primary and secondary points of interest, but if the intending recipient of this information has never received an hour's artistic education in his life, the process of instruction by deduction will be about as laborious and as rational as would be a dissertation on the principles of Greek etymology to a Hottentot.

Out of the plenitude of their knowledge some of the sages are pleased to volunteer the startling information that to make a perfect landscape there is wanting a middle distance—a distance and a principal object—considering that the camera might be dumped down at random, much as they shoot coal in a New York side-walk, and the aforesaid three wants must perforce be supplied ; it would, therefore, argue that anything, anywhere, anyhow, must of necessity be a perfect picture, because it will contain middle-distance, distance, and principal object, even though the principal object be nothing but a dust-heap at the road side, or a philosopher gazing at vacuity.

In the judgment of artists, to constitute a perfect landscape three points are requisite : a figure or figures to give life, a glimpse of water, and such undulation of scenery that the portion transcribed will compose a harmonious whole.

The novice taking out his camera for the first time, and coming across a bit which to his eye is pretty, must consider not whether there are the two immortal distances in this bit, but whether the subject before him is worthy the name of a picture when taken, whether it possess a sufficiency of interest, of beauty, of grandeur, or romance of scene. If he decide in the affirmative, let him set to work and do his best.

Don't divide the focussing-screen into portions, and dignify those pencillings by the high-sounding phraseology of horizontal and vertical intersections,



because a horrible state of confusion must be the inevitable result. Line out the focussing-screen belonging to an experienced photographer, and it will require a surgical operation before he will get the intersection business into his head. What the result would be in the inexperienced hand is impossible to contemplate. When in doubt, go to nature; more will be gleaned from her in a single day than will accrue from years of poring over books of questionable authority.

Take an illustration, Iffley Mill, hallowed by early reminiscences, when the days were young and life was before us. A very rudimentary knowledge of art would induce the novice to place this structure out of the middle of his plate, not that he knows this is the weakest portion of his picture; but his eye, his common sense, even the training induced by familiarity with illustrated journalism, will come to his aid and will tell him there is less formality if the mill appear to one side of his plate, and he will naturally elect to place the mill to the left of the photograph, so that he include the old Iffley lock near the centre, while the towing-path on the right relieves the flat expanse of water. His eye will assist again. He will see that this towing-path requires relief, or, technically, needs breaking up. This can easily be effected by the simple expedient of a boat drawn up to bank, and a figure engaged in fishing or attending to the craft will give an air of life to that which before was still, thus artistically completing the effect or composition. Keep the camera level, and regulate the proportion of foreground by means of the rising front. Use a single-combination lens.

Instance an architectural subject—an interior, as the nave of Canterbury Cathedral. Here the tourist may be shown by the vergers the well-worn steps trodden away by the feet of the pilgrims as they wended their way in times of old to make thank-offering at the shrine of their choice. The verger in charge would sometimes wax facetious in his trade of extracting voluntary pennies from the pockets of the Cockney excursionist. The glories of an English cathedral turned into a six-penny or a shilling show! Pay as you please, my children; the most money expected from the best-dressed. Peace to his ashes! This poor verger was but an instrument in the toils of that system which places cathedrals and caravans on par. "Walk up, ladies and gentlemen! Wait for the next party—the show is about to commence!" And the tourist must plank down his mite, or authority will not admit him to view the wonderful stone-stairs, "worn into their present condition by the pilgrims of old ascending them on their knees!"

The amateur will commence with the nave, where there is no charge as yet for admission, and he will

not emulate the paucity of skill displayed by too many of his predecessors, not excluding professional ranks, and plant his camera precisely in the centre of the edifice, thereby succeeding to perfection in producing the photographic horror, two sides of a picture alike each other as two peas in a pod. He will elect to stand on one side, so as to bring out the beautiful formation of the bays, the faultless symmetry of the shafts, and the splendid perspective on the other side of his plate. A wide angle, doubtless, must be used, and the camera placed absolutely level. Expose for the shadow over the screen, separating nave from choir. Choose the hour when the sun is well round on the southern windows; this will help the screen just mentioned. Never attempt cathedral interiors before the month of March nor after that of September.

Either of the side aisles in the nave will make an admirable photograph, preference being given to the northern one, leading to the Martyrdom Chapel, where St. Thomas was murdered while defending the rights of the people against the encroachments of the King. The chapel itself will be another capital picture, and should be taken to show the dark stone which replaces the blood-stained spot where the martyr fell. In his "History of the English People," Green thus writes:—"Where," cried Reginald Fitzwise, in the dusk of the dimly-lighted minster, 'where is the traitor Thomas Becket?' The Primate turned resolutely back. 'Here am I! No traitor; but a priest of God!' and, descending the steps, he placed himself with his back against a pillar and fronted his foes. All the bravery of his old Knightly life seemed to revive in Thomas as he turned back the threats and demands of his assailants. 'You are our prisoner,' shouted Fitzwise. 'Touch me not, Reginald,' exclaimed the Primate. 'Pander that you are, you owe me fealty,' and, availing himself of his personal strength, he struck off his assailant. 'Strike! Strike!' cried Fitzwise, and blow after blow struck Thomas to the ground. A retainer of Ranulf de Bloc, with the point of his sword, scattered the Primate's brains on the floor."

His must be a cold heart which will not pulsate one beat the quicker in the scene of this, one of the great landmarks in England's history. Imagination can almost listen to the wild rush of murderous feet, can well-nigh picture the panting form of the Archbishop standing face to face with his pursuers, a dull, a heavy thud upon the flagstones, a shout, and murder has been committed in the house of God! The gate to this chapel is locked. It can be opened with the usual key.

A fortnight could be most profitably spent in taking the various details of this magnificent cathedral, interior and exterior. Old St. Martin's



Church will well repay a visit. Expose for the old yew trees, and use a wide-angle doublet.

Some fourteen years since, and the wildest commotion arose in the quiet old city of Canterbury. The great gate of Christ Church was rigidly closed against all comers, and the approach thereto strongly guarded by military and police. Wilder and wilder grew the excitement; men looked at each other or spoke in whispers, and with faces blanched with terror and excitement. Denser and denser arose the fell black smoke against the clear blue vault of heaven, the fire leapt forth to tell the lurid tale for miles around—the grand old cathedral was in flames!

The local photographer, in all haste, drove up in his photographic brougham, and as quickly drove away again; all such admittance was sternly prohibited. An event of this interest, of this magnitude, may occur but once in a lifetime, and a slight departure from the strict lines of truth may be pardoned in those whose business it is to minister to the ever-growing wants and necessities of the British public. There is no harm—in fact, it is rather the other way; and the tourist on his excursion would do well to remember the friendly counsel, supported by experience, and always make a friend amongst those in authority. There is no telling what may happen!

"No admission to-day, sir," but eye met eye, and the glances spoke more than words. "If you have important business with the Cathedral Architect, of course it must be attended to." And once more the massive Christ Church gate was opened, the stranger slipped inside, turning not to the left where are situate the aforesaid architect's offices, but round to the right where resides the worthy and honoured Dean.

Permission in writing was at once granted to go anywhere, so that the operations of the firemen were not impeded. The old and cumbrous wet collodion paraphernalia was rushed in somehow—a giant's strength seemed a normal condition at that moment—the apparatus was set up and view after view rapidly taken of the burning building. On a sudden a cheery voice broke in, "Would you like to go on the roof? I am the Sun Fire Office!" The camera was shouldered, and the friend in need led the way by Bell Harry Tower. It was an anxious ascent, the summit was reached, but what a fearful scene of destruction met the view! The roof of the choir gone, charred rafters in endless confusion, flames leaping hither and thither like the forked tongues of serpents, water running in all directions, molten lead. The shouts from the workers, the indescribable din around, will never fade while memory lasts! That was the time for a cool eye and a steady hand. The picture was taken, another plate prepared, and, with a headlong rush over burning timbers, which yielded to

the foot, across the countless lengths of hose which cumbered the way in all directions, now ankle-deep in dirty water, now all but in a mass of seething lead, with camera on shoulder, a desperate run was made by way of gutter, or anything which offered foothold, to the extreme eastern end of the cathedral parapet. But what a sight to focus! No time to think of sensations or tables of exposure—they were not invented then. There was a black chasm, which once was roof, and distance, middle-distance, and principal object were intersecting each other in grand disorder. The forms of the firemen flitting about—one or two in fair position—made a "study in the flames." The picture was seized with the men at work in the ruins, and was afterwards engraved in the *Illustrated London News*. In subjects of this class the mind must be made up without a moment's hesitation, and the camera fixed in like manner. There is not a second of time for reflection. Focus the leading point of the picture and chance the rest. The lens used was an ordinary angle doublet of Ross, cap off and on.

It is not every day an event such as this happens. When it does, make the most of it—keep eye and head cool, and, if in a dangerous position, fix the gaze on a point in advance, and go for it straight, regardless of consequence. Doubt or fear may result in a sudden descent to mother earth, with considerable loss of dignity and much feeling.

What a field would this have been for the new paper negative!

Every thought must be centred on the subject; and whatever apparatus is used—whether it be the ordinary double-back, with its glass plates, a changing box, a Vergara slide, with its film, or an Eastman roll-holder—it must work smoothly, and without entailing any effort upon the already occupied mind of the operator.

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## ART AND PHOTOGRAPHY.

BY J. F. MOSTYN CLARKE.



IN commencing some articles having for their subject a combination of "Art" and "Photography," the author has no intention of treating the chemical, that is the purely scientific, side of the latter, more than will be necessary to make the work intelligible to the beginner, or to any who may find in it what is useful. And he gladly avails himself of the opportunity given by this introductory chapter to state briefly the objects and reasons for its writing.

There are many people who, amid the daily pressure of their occupations, are unable to give



time to the study of drawing, but, at the same time, to whose cultured minds art, in its many forms, is a necessary of life, whose standards in art are high, and who would gladly avail themselves of any method giving without much labour or close application correct pictures in black and white, yet having sufficient artistic feeling to gratify their taste. To show how this may be done, using a camera as draughtsman, is to be the object; not that the author is so presumptuous as to state that he can make, or teach another to make, pictures of a class equal to drawings or etchings of a high order; but he will venture to say it is possible to produce by the means already mentioned, that which would gratify the most artistically sensitive eye almost as much as these works of art.

But it must be remembered that studies in black and white at no time can give as full a satisfaction as works in colour, taking for the moment both to be perfect. Hence, in furnishing the walls of a room, one or two drawings in colour, however simple, if they have real merit, will enhance the value of surrounding studies in light and shade.

Now, in photography as it is practised in the present day, there are two elements which must be changed considerably before the art fulfils, on the largest scale, its highest duties. These elements are, the class of work demanded by the public, especially in portraiture, and the methods used for its production.

Element number one, with its attendant troupe of so-called "artists," must, it is to be feared, always remain a fact. It is the same with painters and their patrons. There must always be a lower order of artists, whose object is not their art, but the money they make by it, who pander to the taste of buyers liking works of large dimensions, replete with much variegated gold frame, and resplendent in their "nice, bright bit of colouring"; so is it in photography.

In portraits, the public demand, and must be given, that to which they have become accustomed, and it is to be feared, like, for they know no better, nor will allow their instincts to lead them to better; with these this writer has but little to do.

Examine with an analytical eye a friend's face as he or she sits near you; but take care it be one of whom you have a photograph, in order that you may practically apply the following remarks: What do you see? A structure built upon a framework of bones, to which are attached muscles covered by the skin; these muscles take certain forms or attitudes expressing more or less the character of the mind behind them; this is termed the modelling of the face. It is the same throughout the body, the natural positions, even the very

shape and action of the parts, speak eloquently of the character; that upright figure, and broad, well-opened chest, combined with easy movement of the sinewy and well-shaped limbs, shows physical activity and a power to endure; that broad, square forehead, with the prominences over the outer side of each eye, and the slightly-marked perpendicular lines continuing upward from the nose, denote broad-mindedness, united with perception and thought; that clear-cut nose indicates a sensitive disposition; the quick and watchful eyes that look you calmly in the face, are fearless in their truthfulness. So one could go on through the whole of that face and figure, and many others; so do true artists every day and always examine all faces they come in contact with; and so must you who are anxious to do real work in drawing with your camera, examine faces, and learn to understand characteristics, as without this understanding it is impossible to portray, for you must be master of your material, and the sitter is not the least part of that. You must know what every line expresses in a face, as well as their purpose in the composition of a picture.

Now, having studied your friend well, you take the album which contains his portrait, lately executed by a first-class photographer; perhaps only yesterday you thought it charming, saying to yourself: "If only I could succeed in one like that!"

Now, as you look, a sense of dissatisfaction steals over you, instinctively you glance at your friend where he is sitting, and, in order to see him in the position of the photograph, you attract his attention to some object that will necessitate his looking in the right direction. Then the thought is formed: "I wonder I never noticed before their having destroyed the firm appearance of the flesh; having made the forehead smooth, and look quite narrow. All the characteristic lines have been removed, and in their place are left two nice little soft shadows—one downward a little way into the cheek from the eye, the other from the nose downward and outward, touching the corner of the mouth"—this on the shadowed side of the face; and, besides, you think: "How stiff he looks! I never saw him in that attitude." So you analyse until you are constrained to ask: "What makes you look so peculiar here? What were you staring at?"

It is little to be wondered that your friend in his portrait has this unnatural appearance, when we consider the treatment he underwent.

First of all, he was shown into the studio, out of a more or less dark waiting-room, so that the light dazzled his eyes considerably; then he was placed in a chair, and most probably the "artist," by pulling and pushing, worked him into that most unnatural position seen in the photograph before



you. Next, a head-rest was brought to bear on the back of the head (an instrument at all times uncomfortable in its results, as, through their reaction against it, the muscles become rigid), while fixedness was increased by his being given some small object on which to concentrate his gaze; this being wrong in principle, as there is a tendency in such cases for the eyes to become strained.

In the meantime, an assistant at the camera has focussed the image so sharp, by means of a magnifying-glass, that it is a map of the sitter's face, showing even the tiniest outlines. The cap of the lens is then removed and replaced, development accomplished, and the negative passes to the retoucher. In this process the face is generally remodelled, almost all the lines being removed by working with pencils from forehead to chin; hence its stippled appearance.

Besides the alteration of this state of affairs, at all events among amateurs, the author, in these articles, has yet another object, quite as important in his eyes. Among the public there are many who have a prejudice against artists who use photography; now, this is surely wrong, for the art may be made most useful in securing details that cannot be sketched—the grouping of moving figures, and such like; while between a man or woman, who paints from a photograph, and one who only sees it as a means of study, there is a vast difference. It will be his endeavour to help these by giving them hints to enable photography being practised without a very deep chemical knowledge, while, at the same time the laws of art are kept well in view in all the manipulations.

## PHOTOGRAPHIC PROCESSES FOR BOOK ILLUSTRATION.

### PHOTO-LITHOGRAPHY.

BY JAMES SHIRLEY HODSON, F.R.S.L.



IT has been thought desirable to dwell at some length upon a practical description of the form of reproduction for the purposes of book illustration known by the name of relief blocks (see pages 90 and 142), because, of all the various methods of producing book illustrations, this is at once the most readily accessible and applicable, and, therefore, the most generally in demand. In this respect it is considered a more or less satisfactory substitute for wood-engraving, but whether photo-engraving will ever entirely supersede wood engraving is a question which still remains to be

solved, the experience and opinion of experts not being at present unanimously in favour of the suggestion. It must, however, be freely confessed that marvellous and really artistic effects result from photo-engraving far more frequently than used to be the case. Probably it is a question which will never be settled, for the simple reason that the two methods produce results so essentially dissimilar as scarcely to be fit subjects for comparison. Indeed, the essential peculiarities—or genius—of the two methods are so widely different, that even when imitation has been aimed at, and with some success, an expert may readily detect the method by which the results have been produced. After all, the utilitarian and commercial consideration of cost will unquestionably enter very largely into the solution of the problem; and, in this respect, it cannot be denied that the advantage will be seen to be in favour of photo-engraving. Relief blocks produced in this way are very much cheaper than those produced by artistic wood engraving, and, for this reason alone, are sure to command attention for a certain class of publication. There is also another advantage which cannot fail to commend itself to the editors and managers of periodicals, which consists in the greater rapidity with which a block may be prepared from a design by photo-engraving than by wood engraving. In some cases two hours will suffice to produce by photo-engraving a block suitable for printing purposes. Even if the subject of a design should be transferred to a wood block by photography instead of by means of the hand of an artist, the wood engraving could not be produced in anything approaching the rapidity named.

With these general observations, by way of apology for having given the foremost place to photo-relief processes, let us pass on to a practical description of photo-lithography.

Photo-lithography offers singular facilities for the reproduction and multiplication of designs, in some respects superior even to those methods which have been already described in reference to the typographic press. The "biting-up," which forms so essential a portion of the process of preparing a relief block, is altogether dispensed with in photo-lithography. Thus, in the important matter of speed of production, photo-lithography can, at least, hold its own. Again, lithography can, in some measure, compete with the relief process in the facility with which steam-power can be applied to the rapid multiplication of impressions, particularly when large numbers happen to be required. In these purely commercial aspects, it is fair to consider the two methods upon an equality.

Then as to the artistic results. While lithography may possibly be at a disadvantage in



the greater difficulty of acquiring sharpness of outline in subjects of a line character, it has, nevertheless, certain facilities of its own which are held to be a more than sufficient compensation.

In every process where a design is prepared for printing through the agency of photography, bichromate of potash is generally the sensitising material employed. The basis employed as a vehicle for applying this sensitiser is gelatine, and it is upon the knowledge of the peculiar properties of the bichromated gelatine that all the results which are presented in connection with the various processes are produced. These most important and valuable properties are developed by the action of light upon the sensitised compound. The gelatine becomes hardened, or is deprived of its normal and absorbent condition, upon being exposed to light. When the gelatine loses its absorbent power it is at the same time deprived of its capability of swelling when immersed in water. Though often spoken of as a dual property—that is, being rendered non-absorbent, and the hardening of the gelatine texture—the two properties are essentially one. To pursue this theory one step further, and thus to bring it to a practical application, we have only to place a film of sensitised gelatine in contact with a photographic negative and submit them to the action of light in a photographic printing-frame, and notice the result. Wherever the dark parts of the negative, by their opacity, have prevented the rays of light passing through the negative to the gelatine film, that film retains its original condition of ability to absorb water, and of being absolutely soluble by water. In the transparent parts of the negative, on the other hand, where no hindrance is presented to the passage of the light through the negative to the gelatine film, the gelatine undergoes a complete alteration. What was previously soft, absorbent, and soluble, has become hard, non-absorbent, and insoluble. This fact of the change which gelatine undergoes after being acted upon by light, lies at the foundation of all the photographic processes called collotype, heliotype, Albertype, or by whatever other name any of these gelatine processes may be known. The application of this knowledge has also given rise to the process of photoglyptie, or the Woodbury permanent process, and Stannotype; and, as has been before explained, is usefully employed in photo-typozincography.

Mons. Poitevin's process, which gives an admirable description of the application of the principles above specified to the work of photo-lithography, may here be usefully reproduced. It is as follows :—

If an ordinary lithographic stone be covered with an albuminous solution mixed with bichromate of potash, and if this liquid be allowed to dry spontaneously, the albumen,

however much it may be altered in its nature, is not in its solubility, and a simple washing in warm water is sufficient to remove from the stone the greater part of the unaltered matter which has been unable to penetrate it. If the surface thus prepared be exposed to the action of light through the unequally transparent parts of a negative, a change takes place, which is certainly not an ordinary coagulation, and to which the oxidation of the chromic acid doubtless contributes, by rendering the albumen insoluble, and causing it to remain on the stone in large quantities, the larger the more intense the exposure to light has been. Thus changed the albumen resists water as if it were a greasy or fatty substance. In this state it rapidly absorbs an ordinary greasy ink, which does not adhere to the portions of the stone where the light has not acted, so that if a roller charged with an ink containing soap, which lithographers call transfer or reprinting ink, is passed over the stone, the ink adheres only to the albumenised parts of the surface, and the latter is thus coated with a greasy ink, distributed in varying proportions of an ordinary drawing. The excess of ink is removed by acidulation and damping with a sponge. The drawing is made level by being submitted to the ordinary lithographic operations; that is to say, the removing of the colour with essence of volatile oil and the re-inking with the roller; and nothing further remains but to cover the stone thus prepared with a coating of gum, which only adheres where there is no ink, and to submit it to ordinary inking and to acidulation, to be enabled to obtain from it as many copies as if the drawing, which has been entirely made by the light, had been made in the ordinary lithographic manner.

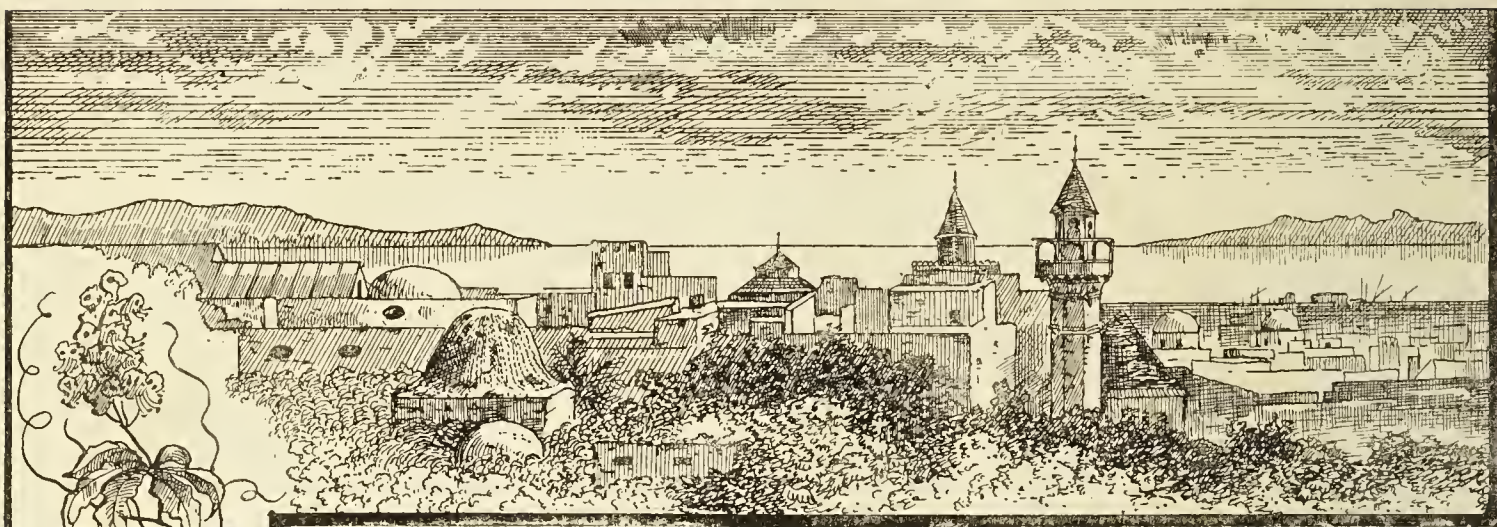
Exception may possibly be taken, on technical grounds, to M. Poitevin's description, on the score of his apparent contradiction in stating that the hardened gelatine—which has been deprived of its absorbent quality—"resists water" but "absorbs ink." This is, doubtless, perfectly intelligible to a practical man, but may require a little explanation for amateurs and theorists. The hardened albumen does resist water; but although lithographic ink will rest upon it sufficiently for printing purposes, it does not absolutely absorb the ink any more than ink is absorbed by a wood-engraving. If it had been stated that the albumen resists water and has an affinity for the greasy ink, the statement would have been more correct, both technically and theoretically. In any case, the description is quite up to the modern practice of our best photo-lithographers; and it should be understood that the technical variations which may be observable amongst the various operators is merely the result of slight modifications, cherished as "secrets," which have been acquired in the course of practice. One of these modifications suggested by experience has taken the form adopted of producing the complete picture or design in the negative, and transferring an impression to the stone in the ordinary way.

Examples of photo-lithography are so numerous that it will only be necessary to refer to the example of a fresh departure in this direction which was given in the August number of the CAMERA, and which is called the "Photograde" process.



## ALGERIA AND TUNIS AS A FIELD FOR PHOTOGRAPHY.

BY W. H. BARBROOK.

*(Continued from page 182.)*

General View of Tunis.



THE traveller, taking the circular tickets of the Transatlantique Company, will, on leaving Algiers, either proceed westward to Oran, or, as the writer did, eastward by one of the coasting steamers. The latter route is full of interest; the steamer makes repeated stoppages for passengers and cargo, and sufficiently long to enable the passenger to go on shore and see the surrounding country.

The prettiest place of all is Bougie, famous for its candles, from which the French have derived the name. This, to my thinking, is the most lovely spot I have ever seen. During the two or three hours the steamer was taking in cargo, I got some charming little negatives on shore; and in the Arab market I found a particularly fine courtly specimen of his race, and longed for a chance to photograph him. For about a quarter of an hour, in conjunction with a fellow-passenger—the proprietor of a travelling circus, who spoke Arabic—I tried persuasion, entreaty, and finally bribery, but all to no purpose. I mention this as another instance of the inveterate dislike the true disciple of Islam has to the amateur photographer. If the traveller is free to choose his route he may get to Constantine by diligence from here by passing through the magnificent pass of the Chabet-el-Akhira, perhaps the finest excursion in the whole country.

At Bougie we took on board two hundred and fifty Kabyles, a tribe of Arabs, descendants of the

ancient Numidians, devoted to agriculture, who were going to another part of the country to gather in the harvest. These poor fellows—for poor they were in every sense—brought all their worldly goods with them in a sack, and, squatting down on deck, never moved from their position the whole of the voyage, and were happy and contented with a few dates and an orange as their only meal. It was certainly a weird sight at night, under a full moon, to see the deck literally covered with their recumbent figures, for there was hardly space to put your foot down without treading on them. I endeavoured the next day to take a shot at them with the camera from the bridge, but it was a work of some difficulty. As soon as they saw what was coming, they covered their faces with their *bermouss*, but curiosity presently overcame them, and the trigger went. They all landed at Phillipville, a modern French town of no interest, and there I landed also, and took the railway to Constantine, the key, in a strategical point of view, to the whole of the country. The line is a marvel of engineering, winding round mountains, up tremendous gradients, continually on the rise, until Constantine is reached some fifty miles or so in the interior, and 2,162 feet above the sea, surrounded on three sides by a deep and narrow ravine, through which flows the river Rummel. Constantine, though now rapidly becoming a thorough French garrison-town, has not yet lost all its national character, and there will be many opportunities for obtaining some characteristic views. There is a large Moorish quarter here, with its quaint bazaars and pic-



turesque merchants, and outside the walls there is a true Nomadic encampment of the unsophisticated child of the desert, with all his filth and abominations untouched by the reforming hand of sanitary science. There are also some very fine Roman ruins in the neighbourhood. As Constantine is not much more than a day's journey by carriage to the margin of the Sahara,

jungle, until the last few years the haunt of the lion, and, indeed, he is not yet extinct. At Hammaw Musketin, a curious phenomenon is observed in the springs of boiling water which seethe, bubble, and steam on each side of the line, and as there is good accommodation to be got at a building erected for bathers in the sulphur springs, a night may be advantageously spent here.



Bougie.

a most pleasant excursion may be made to Biskra, where may be seen life and habits very much as in the days of Abraham. The railway from Constantine to the seaport town of Bône passes through a somewhat malarious country—the home of low fever—and it is stated that the bones of hundreds who helped to lay its rails lie buried at its side. A great part of the way is through a

Bône, though an important town in the colony, is quite modern, and has few Moorish characteristics. It is a place, however, of great interest, in consequence of its near proximity to the ruins of Hippo, associated so intimately with the life and death of St. Augustine. Nothing, however, now remains but the massive cisterns, which make a grand and picturesque ruin. Here at Bône we



again take a Transatlantique steamer, and, after a voyage of some twelve hours or so, anchor off La Goulette, in the Gulf of Tunis. Landed at La Goulette, one is desirous of getting out of it again as soon as possible, for the streets are filthy, and the smells outrageous. There is a little railway, which puts you into Tunis in about half-an-hour, and passes the ruins of Carthage on the way. Tunis is far more Eastern than Algiers in its characteristics, its bazaars more interesting, its people quainter, its streets dirtier, and the whole sight, to an Englishman, if possible, more novel. Usually the first thing he looks at with a critical eye on entering a new country is the ladies, and certainly the belles of Tunis are a sight to see, and, once

Overland Route." The late Mr. Buckstone enacted in that comedy the inferior half of a very stout lady, and, in Buckstonian French, he described her as "a graceful ombong (*embon-point*)."

I think that this term can be very happily applied to the Tunisian lady who is the subject of our illustration.

Although what is to be seen in Tunis is very interesting, and will occupy three or four days if it be done thoroughly, that period will be ample for anyone, for it is hardly the place the traveller would choose to settle down at for his health's sake. He will probably leave it for Europe, either by way of Corsica, or, as I did, for Malta, where I spent a week with much pleasure. In a



La Goulette, Gulf of Tunis.

seen, never to be forgotten. They are generally short in stature and exceedingly fat, so fat, indeed, as to be repulsive in our eyes; but, in those of a Tunisian, this constitutes their great charm, and in order to enhance their beauty they wear tight-fitting trousers and a loose bodice, which shows off their figure to the best advantage. Altogether, their appearance is so remarkable that it will be better comprehended by a reference to the accompanying engraving, which is a faithful copy of a photograph of one of the professional beauties in the city two years ago. Some of my readers will be old enough (male readers are here understood, of course,) to remember the production at the Haymarket Theatre of Tom Taylor's play, "The

future number of this journal, if the editor is good enough to permit me, I may resume these jottings by a reference to a few photographs taken while following the footsteps of the Apostle St. Paul from his shipwreck at St. Paul's Bay, in that island, to his appearance before Cæsar in the great capital of Rome.

One word of warning, in conclusion, may not be amiss.

Do not be afraid of fever; but take care never to drink water unless it has been boiled. These countries on the northern shores of Africa are naturally healthy in their climate; but in the cities it is generally admitted that typhoid is not uncommon, and this, no doubt, is in consequence



of the neglect of the first elements of sanitation which we find even in the best of them. The natural waters of St. Galmier and other places can be obtained everywhere, and it is better and safer to drink only these.



A Tunisian Professional Beauty.

## NOTES FROM NEW YORK.

BY DR. EDWARD L. WILSON.

**Q**UIETLY, but earnestly and surely, the preparation is going on for the annual exhibition of the amateur societies of Philadelphia, New York, and Boston combined.

All the mistakes made at previous exhibitions are to be avoided, and everybody is to be pleased.

Besides all the other good that grows out of them, these exhibitions serve as a grand mirror to the careful and thoughtful exhibitor. He sees the opposites of his negatives presented in a new light, and becomes more acutely conscious of his mistakes than he does under the praise of the

admiring friends to whom he is in the habit of presenting prints.

Two things usually give me a heartache when I go to an exhibition. The one is to see a romantic young maiden, in seaside habit clad, leaning languidly upon a papier-mâché rock, with a Roman villa background, and a bunch of cot-tails held pointing toward the polar-star at one end and toward Sheol at the other—and many things equally bad. The second is the more than generous profuseness of the average exhibitor.

Now, I do not suppose any of the patrons of the CAMERA—as votaries of the camera—care anything about my heartaches, not that what I say is going to make any change either, for have I not been pounding away, for art and care, for nearly a quarter of a century, and still these things be?

Yet I am so constructed that I always feel sorry for a man when he fails in his efforts; and so I am heartbroken when a man's work shows that he has a desire to make his work artistic, but that he has only studied enough to get the desire without reaching the art.

There is no excuse for failure in the art direction. It is due wholly to the abominable wish to do as large a lot as possible in the shortest time possible. And things won't come out any better until this wish is abandoned.

Authors do not discount their best stories by publishing rubbish alongside, neither do painters risk placing their experimental studies on the wall with their last, best work. More of art, less in quantity, and greater sincerity is what we want to see.

Speaking of mirrors reminds me of the interesting experiments of M. Pictet and Dr. Raoul in the construction of their reproducing mirrors. If we are to be supplied presently with looking-glasses which may be made quickly to reveal every act of crime, love, villainy, conspiracy—focussing which transpires before them, what is to become of us? What use will there be for the camera?

Already millions of mirrors are being accidentally smashed, and the enterprising reporters of the daily newspapers have raided the auction-stores and purchased every secondhand reflector of the past to be had. If M. Pictet and Dr. Raoul are not assassinated, or “retained,” we shall see our amateur societies disbanded and our opticians and apparatus-makers turning to electricity. How shocking!

Meanwhile, it becomes us to push “forward,” after the formula given to the Edinburgh Photographic Society recently by Mr. Andrew Pringle. I have a profound admiration for a man who will stand up before a body of men and address them in such hearty style, when he must feel in his heart that scarcely one will give a bit of thought to what he is saying.



I also admire the man who can, and will, as did the kindly veteran, Mr. Valentine Blanchard, recently, in the *CAMERA*, tell of his experience for the help of others. If such men had not kept right on with their good works all these years, in the name of Sol where would photography have been to-day? I fear I should have *two* heart-aches at every exhibition.

It is the *few* men who have ever had an abiding faith in our art who have kept it up, and not the many who practise their mechanics upon it.

These thoughts came to me as, in this, the twelfth month of the year 1886, I hold my mirror up to the eleven that are gone, and try to see what sort of an image I can secure. I see much to cheer and to encourage. The face of our beloved art is fairer and fuller. Its look is more benign, coupled with a conscious usefulness. But there are two or three blotches upon its fair cheeks, which will not disappear until a thorough cleansing from certain radical mistakes is effected.

Let us hope that the new year may do much towards this, and therefore I send my best greetings to all your readers for 1887.

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## THE OPTICAL LANTERN.—III.

BY THE EDITOR.



THOSE who are inclined to try the wet process for lantern-slides cannot do better than follow the directions on another page by Mr. W. Goodwin, which are practical and easily understood. But I fancy that a developer which gives a finer deposit—and this is of great importance for lantern-slides—will be found in the following formula. To half a gallon of distilled or filtered rain water add four ounces of a saturated solution of sulphate of iron, and four ounces of methylated spirit. Filter this into another bottle, and add four drops of colocine. Just before use add one drop of acetic acid to each ounce required at the time. I may also add another item to the information given by Mr. Goodwin. The colour of the deposit on a wet plate, although it does not affect the enlarged image on the screen, is disagreeable, and misleading if the picture has to be subsequently coloured. It can be toned to a deep black by immersion for a short time in a solution of chloride of platinum (one grain to two ounces of water). The glass picture should remain in this toning solution until the image seems to have changed colour on both sides. The toning operation takes place after the slide has been fixed and washed.

It has been stated by more than one writer that the best lantern-slides are produced by this wet

process, and they endeavour to prove their assertion by saying that all the commercial slides are made by this method. This is true enough, but the fact is that there is such a certainty and ease about the wet process that it is in every way the best for commercial purposes. I am certain, however, that it will not give the beautiful delicacy of a gelatine plate. Not long ago I compared one of my slides with a wet plate—one taken from the same negative—by a first-rate operator, who is used to this class of work, and hardly does anything else. He was bound to admit that the gelatine picture was the better of the two, and said that he should think of relinquishing his bath after seeing what gelatine plates could do. I advised him to do no such thing, and for the reason just given. A wet plate is so certain in its results, that an unskilled hand, if he be furnished with the materials, can produce picture after picture without difficulty. I cannot say the same of gelatine plates, for they are such ticklish things that oftentimes something or other will go wrong. But for the amateur worker, to whom a few failures are not of any great moment, gelatine plates are best adapted. The silver bath, with its concomitant stained fingers and spoiled linen, is, I think, best left alone, unless the amateur adopts it as a necessary part of his photographic education.

In my last paper I confined my remarks to working with gelatino-chloride plates by contact with the negative. These plates are the easiest and most comfortable things to work with, for they are so insensitive that an ordinary lantern covered with a sheet of oiled yellow paper is sufficient protection. The operator, therefore, can have sufficient light to do his work properly, for he can see every detail without straining his eyes. With bromide plates, on the other hand, he must take all the usual precautions, just as if he were engaged in making negatives. But bromide plates have certain advantages which are not found in chloride plates. They can be used for obtaining reduced positives in the camera, from negatives of any size, and they can also be used for contact printing by gaslight or by the light of a paraffin lamp. Let me say a few words about each of these operations.

On page 175 I gave certain directions for copying drawings, &c., and advised the use of a deal table furnished with a couple of rails, between which the camera could be run to and fro, in front of a vertical board or box. For copying negatives, let this board be a frame. A printing-frame can be adapted to the purpose, in the rebate of which the negative can rest, film side towards the camera. Tilt the arrangement so that the negative can be seen against the open sky, but in the upper window of a house from which sky is visible on the horizon, no tilting will be necessary. In a



walled-in London house, sufficient illumination may be had by placing a sheet of stiff white card at an angle of 45 deg., so that the sky light may be reflected towards the glass. A conservatory or a back-yard is best for the work, if a clear sky view cannot be had. The camera must be furnished with a carrier, to hold the lantern plate, or, if a  $\frac{1}{4}$ -plate camera be used, the  $3\frac{1}{4}$  by  $3\frac{1}{4}$  must be placed in the centre of the dark back. The same lens may be used as that already recommended for copying purposes, and the exposure with a normal negative will be somewhat longer than that already indicated. I have lately tried some plates made for lantern use by Messrs. Mawson & Swan, and have obtained very fine results with them. I tried two different brands—namely, the “lantern plates” and the “photo-mechanical plates.” I found not the slightest difference between the two. They are both good. With these plates I obtained excellent pictures by contact with an average exposure of half a minute, one foot from the flame of a paraffin lamp.

In developing bromide plates for transparencies, it is necessary to look through the film occasionally, for the image by reflected light is deceptive. With some plates the picture seems to be too dark, when, in reality, there is but a thin image. This is notably the case with chloride plates. With bromide plates, on the contrary, the image looks pale and weak in the developing-dish, when, in reality, it is quite dense enough for all purposes. My rule is to let the plate remain in the developer until, when held up to the red light and looked through, the image appears denser than it ought to be when finished. Even if an error is made, and the image is a little too dense, a soaking in the fixing-tray for twenty minutes or thereabouts will secure the necessary reduction. This remark applies to bromide plates only.

In the directions which accompany the Mawson lantern-plate, a new developing formula is given as under :—

A.	Pyrogallic acid .....	40 grains.
	Meta-bisulphite of potash .....	120 grains.
	Distilled water .....	1 pint.
B.	Liquor ammonia .....	$2\frac{1}{2}$ drachms.
	Bromide ammonium .....	40 grains.
	Distilled water .....	1 pint.

Use equal parts of A and B.

I must frankly confess that I have not tried this developer, and for the reason that the plates give me all the effect which I require if developed with the ordinary ferrous oxalate formula. I have used this last developer for years for transparency work with my own plates, and when I hit upon a good thing I stick to it. It is a mistake to crowd the shelves of a laboratory with bottles containing dozens of mixtures suggested by different workers, and in this case I see no use in adopting a fresh

recipe when an old one, which is ready to hand, serves my purpose. The plates will also give fair results with Beach's developer, but the colour of the deposit is not so good.

Gelatine lantern-slides do not require varnishing, for they are sufficiently protected from external influences by the way in which they are mounted. Each must be furnished with a cover glass—spoilt slides with the films washed off can be used—separated from the picture itself by a cut out paper mask. These masks can be purchased with round, square, or cushion-shaped openings, and the worker must exert a little taste in finding out which shape is suitable to each particular subject. If his lantern have a condenser of  $3\frac{1}{2}$  inches diameter only, he must perforce adopt the round opening, unless he is content to see the corners of the picture darkened on the sheet. Slips of paper, ready gummed, can also be bought for binding picture, mask, and cover-glass together; but the gum is not very adhesive, and I prefer to cut slips for myself and to use flour-paste to attach them to the glass. There is a description of thin blue paper used by grocers for wrapping up parcels of tea. Cut this paper into strips 14 inches long by half-an-inch broad. Paste each slip separately, and place the slide upon it at one end, while it lies flat on the table. Turn the slide over and over so that each edge takes up its complement of paper, and in the meantime press down the overlapping edges on each side. This operation, simple as it seems, requires a little practice and dexterity before it can be easily accomplished.

## THE HUMAN EYE CONSIDERED AS A PHOTOGRAPHIC CAMERA,

WITH ESPECIAL REFERENCE TO THE RETINA.

BY DR. G. LINDSAY JOHNSON.

(A Paper read before the Camera Club.)



THIS subject is not merely one of supreme interest to the physiologist, but capable of throwing considerable light on the subject which brings us here to-night—that most fascinating of all arts, photography. Now, the subject which I intend to introduce to your notice to-night must be considered from two distinct standpoints. The optical apparatus itself, which acts a merely mechanical part, and the retina or sensitive film, in which the chemical and chemico-physiological changes are wrought. The whole subject is one of so wide a range, and so complicated, that it would be entirely beyond one's power to discuss the whole subject. I can only, therefore, pick out a few of



the more elementary and interesting points as material for this evening's discussion.

Now, first of all, as regards the structure of the human camera itself. The human eye, which in structure and shape resembles that of the greater number of animals familiar to us, may, for all practical purposes, be considered as a sphere or globe one inch in diameter. This globe consists of an exceedingly tough capsule completely surrounding the fluids inside and giving the eye its shape. Four-fifths of this capsule consist of tough, dense, opaque white fibrous tissue, woven into a kind of felt, with minute spaces everywhere, in layers, by which the drainage system of the eye is carried on. The remaining fifth of the capsule is quite transparent and colourless, although otherwise very similar in structure to the

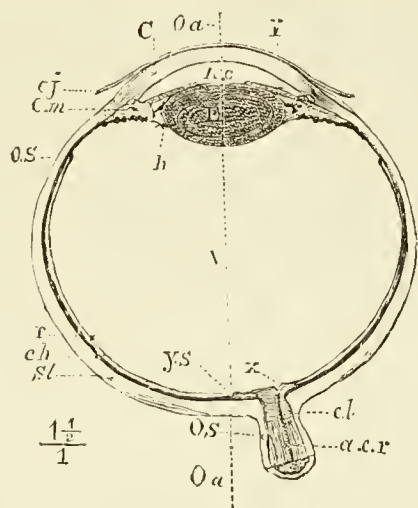


Fig. 1.—View of the human eye divided from before backwards, enlarged  $1\frac{1}{2}$  times. *C*, cornea; *SL*, Sclerotic; *Ch*, choroid; *r*, retina; *v*, vitreous; *l*, lens; *I*, iris; *cm*, ciliary muscle; *ys*, yellow spot; *Oa*, optical axis.

sclerotic. This clear part, the whole of which is visible in every one's eyes, we call the cornea, while the opaque capsule, which in greater part lies hidden from sight, is called, from its tough nature, the sclerotic. Lining the sclerotic, but not the cornea, we have two membranes. First, one called the choroid, almost entirely made up of bloodvessels; and inside this another membrane containing only a few bloodvessels, and altogether different from any other part of the eye in structure, called the retina. This is entirely a nervous tissue, very complicated and delicate, and continuous at the back of the eyeball with the fibres of the optic nerve, a thick cord, about  $\frac{1}{8}$  in. in diameter, made up of an immense number of nerve fibres which convey the impressions of the picture taken on the retina to the brain. This nerve membrane lines the whole of the posterior half of the eye, excepting at one spot, where the nerve enters to form it. Here it is quite absent. Everywhere this membrane is lined with a dense layer of black pigment cells. If we trace

the choroid membrane forwards, we find it gets changed as it reaches the spot where the sclerotic becomes transparent cornea, and we get a new membrane called the iris. This beautiful tissue, which we see in everybody's eye, lying behind the clear cornea, consists of a network of elastic fibres and vessels lined at the back with pigment, the amount of which varies in different eyes, and gives them the distinctive colour by which we designate the eyes as blue, brown, hazel, grey, and the like. In the centre of this iris is the pupil, which is merely a round hole where the iris does not meet to intercept the light, and appears black from the absence of any reflecting surface in the eye to throw light outwards for us to see. Immediately behind, and resting against and supporting the iris, is a bi-convex lens, made of clear albuminous matter, dense and elastic, and held in its place by a circular ligament. In front of this lens is a clear, thin fluid, the aqueous, which fills all the space left between the cornea and the lens; while behind the lens, and occupying all the space left in the eye, is a jelly-like fluid, closely resembling in structure and appearance the white of a fresh, unboiled egg.

Such are the parts of the eye which we will proceed to describe, so far as is necessary to explain their optical properties, for comparison with the photographic camera. Thus you see, in the eye we have, first of all, a dense fibrous envelope which we may compare to the woodwork and bellows of the camera. This is lined with a thick, soft bed of bloodvessels. On this bed is a pavement layer of dense, black, pigment cells, which furnish the "emulsion" and keep up a perpetual supply of sensitive material. Inside this is the retina itself, on which the picture is formed and elaborated before being carried along the optic nerve to the brain proper. Then we have the lens, which is capable of self-adjustment, so as to bring objects at any distance far or near, to perfect focus on the retina; an adjustable diaphragm in front of the lens; and, last, but not least, a most convenient and portable stand, which is perfectly adjustable and furnished with a good pair of legs. In this respect nature has undoubtedly the advantage over the photographic tripod. You must not imagine from this that the analogy between the eye and the camera is complete. So far as the purely mechanical apparatus is concerned, *i.e.*, up to the point where the picture in all its natural colours is brought in focus on to the sensitive plate, it is, but here all resemblance ends. It is true that the light acts on the visual purple which is supplied by the pigment cells mentioned before as lying immediately behind the retina. It is true it will bleach this purple; and if the eye be hastily removed in a dark room under certain conditions, an outline of the object focussed may be secured and fixed.



But, after all, this is not sight. Still it is a step towards the solution of the problem of sight, and I hope at least to go thus far with you this evening.

Now, let us once more consider the lens, and compare it with those used in photography. As you are all aware, a presentable photograph *can* be taken with an ordinary convex spectacle-glass, which you may purchase for sixpence; or even with no lens at all, if you allow the light to pass through a very small hole; but a first-class negative cannot be taken with a lens made out of a single piece of glass. There are two reasons why this is so. First, if the lens be of considerable diameter compared with its focus, the rays which pass through the centre are not brought to the same focus as those which pass through the margin. This is termed spherical aberration, and the larger the opening of the lens, or the nearer the object to it, the greater will be the aberration. In the photographic lens we can meet this difficulty in several ways: by substituting two lenses, each double the focal length of the one required, and placing them a little distance apart; by placing the single lens at some distance behind a diaphragm—in other words, stopping it down; or by adjusting the curves of the front and back of the lens to a well-known formula. Lenses thus free from aberration, when used with full apertures, are termed aplanatic; while those which need a diaphragm are called antiplanatic.

The second reason why a single biconvex lens fails to satisfy the photographer is due to the unequal refrangibility of the different coloured rays which make up daylight. If you let a beam of light pass through a prism on to a screen, you will notice all the rays are bent towards the base of the prism—the violet most of all, the blue somewhat less, then the green, yellow, and orange, and the red is bent least of all. Now a convex lens consists of an infinite number of prisms all meeting with their bases in a common axis at the centre, and hence every colour requires a different focus on the screen. In photography, this is especially awkward, because the rays which light up the picture on the ground glass—*i.e.*, the “visual” rays—lie towards the red end of the spectrum, while some of the rays which act on the sensitive film, or “chemical” rays, as they are called, lie so far towards the opposite end that they are actually invisible. So with such a lens, if we focus carefully and then expose the plate, on development, we should find the picture out of focus, since the focus for the photographic rays would lie nearer the lens than the picture we see on the ground glass. This chromatic aberration, as it is called, is corrected by combining together lenses of different kinds of glass, of which the dispersive power is different. Newton, who made

some invaluable discoveries in connection with this subject, unfortunately delayed the discovery of achromatic lenses for half a century by publishing the mistaken notion that the dispersion of colours in prisms was directly proportional to their refraction, and therefore achromatism was impossible. It was not until Dollond produced the first achromatic telescope that the problem was solved. He showed that by cementing two lenses—a biconvex lens made of crown glass, with a concavo-convex lens of flint glass—that he could bring the blue and orange rays together. Of course, *absolute* achromatism cannot possibly be secured, for to get it we should want as many pairs of lenses as there are colours; but for practical purposes, if we unite two colours, such as the blue and orange, and neglect the rest, we shall get a compromise which will answer every purpose. Now, let us examine the lens and see how the difficulty is overcome there. The human lens on being removed has the appearance of a highly-magnifying, perfectly clear, and colourless biconvex lens. If we dissect it (which may be best done by boiling the lens so as to coagulate the albumen), we shall find that it consists of a central biconvex nucleus of high refractive power, which will closely correspond to the crown glass of the achromatic combination

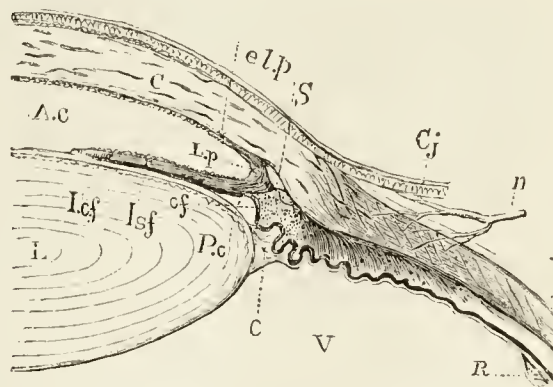


Fig. 2.—The front of the lens enlarged. *L*, lens; *Ac*, aqueous chamber; *C*, cornea; *V*, vitreous; *Icf*, circular fibres of iris; *Isf*, straight fibres of iris.

above mentioned, and on either side of this a concavo-convex glass of lower refractive power, the concave surface of each exactly joined by means of Nature's cement to the corresponding convex surface of the central lens, and bearing a close analogy to the flint concavo-convex lens. Many landscape lenses are actually made at the present time of a biconvex crown and two concavo-convex flints on either side, thus being almost an infringement on Nature's own patent.

(To be continued.)

AN exhibition of photographs and apparatus is to be held at Reading at the end of January, and from it will possibly spring a local photographic society.



## NOTES FOR BEGINNERS.—IV.

BY "DEXTER."



It is now time that I said a few words about the home requirements of the beginner in photography. He must have some room, den, or large cupboard, which he can call his own; and it would be best to find out that he can be thus provided before he attempts to commence operations in earnest. If he has the choice of a room, let his first care be to see that a water-supply pipe is within convenient reach of it. From this supply he can then have a pipe laid on to the room, to terminate in a tap above his sink. He should also see that the waste-pipe from the sink can find a convenient exit. I know that many a good negative has been turned out with no more appliances than a dish, a bath, and a jug of water, but the inconvenience of such temporary arrangements is great, and the labour of fetching and carrying jugs of water and baths full of black waste is great too. Therefore, let the beginner aim at having his own tap and sink, so that he can develop his plates with comfort and ease, and thus have every encouragement given him to turn out good work.

More than one model dark room has been described in these columns. Where the room to be devoted to the purpose is of good size, Mr. Dresser's arrangement, described and figured on page 33, can be followed with the greatest advantage. But where space is limited, the hints given on page 102 will be perhaps more valuable. Mr. Dresser's plan of fitting frames of different media to his window, according to the nature of the operations going on at the time, is a capital one. But it must be remembered that his window belongs to a room built for the purpose of photography, and therefore of a convenient size. The beginner, whom I now address, may very probably have to deal with a room in which a window six feet by five has to be doctored, and he will soon see that the frame plan is inadmissible in his case.

Under such circumstances, I should advise him to cover all the glass, except a few chosen panes at the lower part of the window, with thick brown paper. A clear space, two feet wide by one foot in height, will be ample for photographic purposes. This space can have attached to it a picture-frame, with the rebate towards the room, and in this rebate other frames, *à la Dresser*, can be inserted temporarily, and secured by buttons. If the frame which is fixed to the window be made of sufficient depth for a gas or paraffin lamp to be placed between it and the window, provision will at once be secured for working at night. But in this case ventilation of the space in which the lamp stands must be secured. In the case of a

gas-lamp, the supply-pipe should be laid in such a direction that a tap governing the height of the flame is within easy reach of the operator's hand as he stands at his work. The sink should, if possible, be close to the window, so that directly a plate has been developed it can be swilled with water.

The dark room should contain plenty of shelves and racks for plates and dishes. If the room is dry—as it should be—negatives can also be stored here. My own plan is to keep them standing on edge, in boxes, with a piece of paper between each. These boxes should be labelled with some clue to their contents.

The beginner need not start with a large quantity of chemicals. Ten shillings will more than cover the cost of this part of his outfit. Let me give a list of those chemicals which are absolutely necessary, with their price as quoted in a retail list now before me.

Pyrogallic acid, one ounce bottle, price 1s. 2d. This chemical keeps well, and the quantity quoted will develop about 150 quarter-plates.

Liquor ammonia, 880°, four ounces, price 6d. This pungent liquid is simply water charged with ammonia gas. It is so volatile that it gets weaker and weaker every time the stopper is withdrawn; and in warm weather the gas will often cause the stopper to fly out of itself. For this reason it is better to dilute the ammonia at once with half its bulk of water, and this addition can afterwards be allowed for in compounding formulæ into which the drug enters.

Hyposulphite of soda, or fixing salt, 3 lb., 6d. Keep this in an earthenware jar with a cover to it. It keeps well in a dry atmosphere, but gets sloppy in damp air. Keep it rigidly away from other chemicals, and do not let particles of it drop about the dark room, although it costs so little.

Bromide of potassium, 1 oz., price 3d. This may be at once mixed with 10 oz. of water, and labelled—Bromide of potassium, 10 per cent. solution.

Oxalate of potash, 1 lb. price 1s. 4d. Keep this dry in a bottle until wanted.

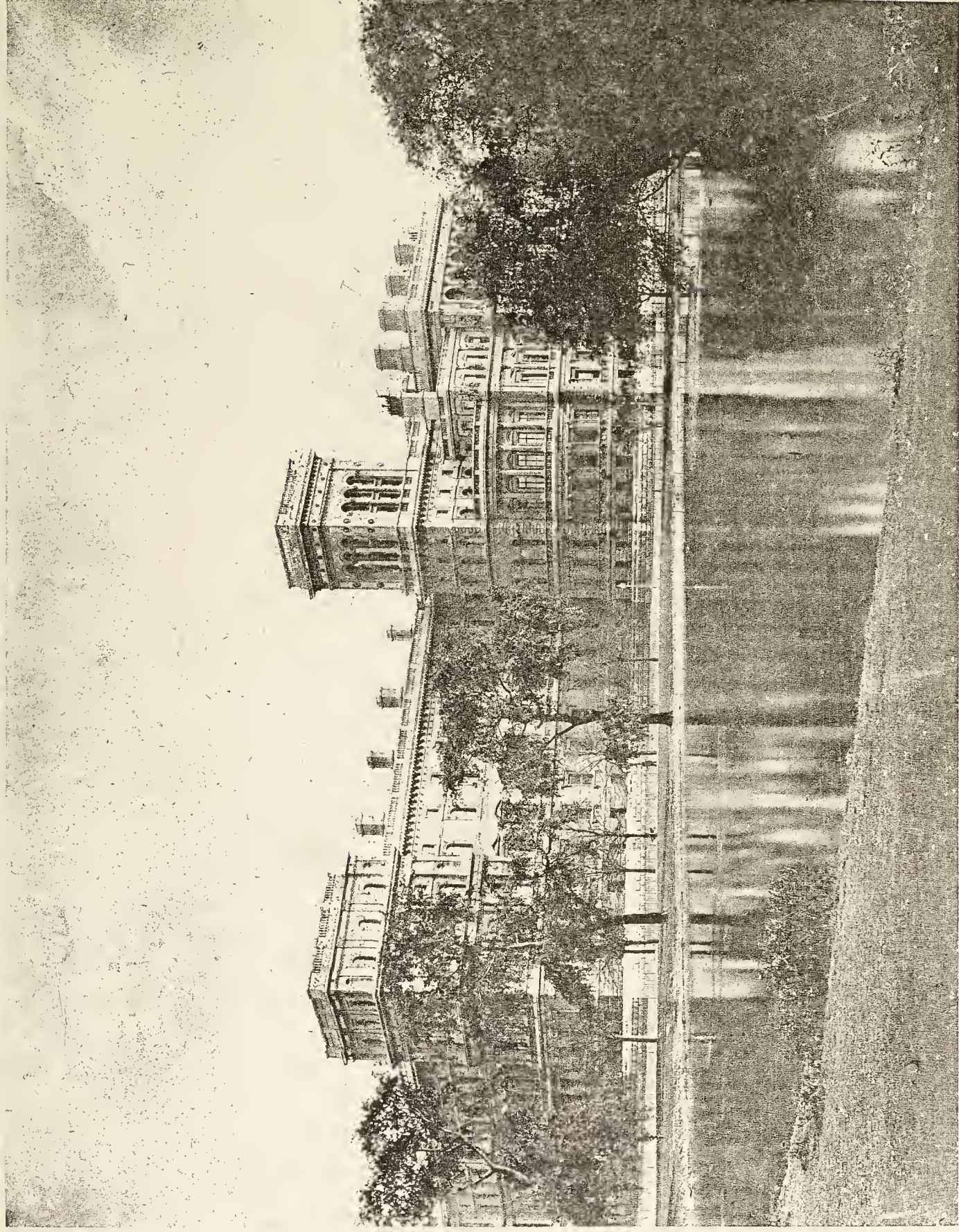
Protosulphate of iron, 1 lb., price 3d. Keep this also dry until required.

Alum, 1 lb., price 3d. This may be bought in powder, and the whole of it transferred to a half-gallon bottle and filled up with water. As it is used water should be added, so that the bottle is kept always full. As long as any undissolved alum remains as a sediment, the solution may be regarded as a saturated one.

Acetate of soda, to be kept in a bottle dry,  $\frac{1}{4}$  lb., 4d.

Chloride of gold, one 15-grain tube, price 1s. 9d. This salt of gold is so deliquescent that it is sold in hermetically-sealed glass tubes. Place





THE FOREIGN OFFICE, ST. JAMES'S PARK, LONDON.

(From a Photograph by Vernon Heath.)







this tube in a 2-oz. stoppered bottle, and break it by pressing upon it with a glass rod. Then fill the bottle up with 15 drachms of distilled water. Each drachm will then represent one grain of gold. It dissolves instantly.

Let me impress one very important thing upon the photographic aspirant. The utmost cleanliness must be observed throughout all operations. Let him not leave the washing of bottles, glasses, and developing dishes to servants, but do the work himself. In addition to the list of chemicals named above, the worker should have at hand a bottle of dilute acid for cleaning purposes. A quarter of a pound of hydrochloric acid (sold at the oil-shop under the name of spirits of salt) should be mixed with about a quart of water. This, with the help of a little mop kept for the purpose, will cleanse dishes, glasses, or the sink itself from any chemical stains in a few seconds. The same mixture, still more diluted, will quickly remove the gelatine films from spoilt plates. But if these have been varnished, a preliminary soak in strong washing soda will be necessary. The mention of varnish reminds me that I have omitted this from my list of requisites. It is best bought ready-made. If too thick, as it sometimes is, it may be diluted with methylated spirit.

## LIESEGANG'S ARISTOTYPE PROCESS.

BY WALTER E. WOODBURY.



NOTWITHSTANDING the fact that so much has been written of late months upon various gelatine emulsions for direct printing, the majority of busy professional photographers will find it a matter of perfect impossibility to manufacture it, involving, as it does, considerable time and trouble. This being the case, it is with pleasure I see that several of the leading continental manufacturers, such as Liesegang and Obernetter, are bringing into the market paper coated with this citro-chloride of silver gelatine emulsion.

I have, as yet, only tried the former; and, in giving practical details regarding the working of it, I must state that it is done in the hope that it will induce others to at least make a trial of this process of the future. I say process of the future, because its multifarious advantages over the old unsatisfactory albumen process will be perceptible to all. Among these advantages the chief are:—

Firstly: The prints are, without doubt, superior; and reproduce with much greater fidelity all the details of the negative.

Secondly: From weak negatives that do not give good prints on albumen paper, satisfactory prints can be obtained, for the simple reason that

in the subsequent manipulations the dark parts of the print become darker and more vigorous, and the light ones lighter.

Thirdly: The printing is from two to three times more rapid, it not being necessary to over-print—that is to say, to print darker than is required for the finished picture—no loss being sustained in the different baths.

Fourthly: By a process I shall hereafter describe, any surface can be given, from the highest polish of an enamel print to the matt surface of an engraving.

Lastly, but by no means least, the advantage is that the prints do not fade in the same manner as albumenised-paper pictures do, as the organic salt employed is a definite compound, and not so uncertain as the albumenate of silver is. In Liesegang's "Aristo Paper" citrate of potassium seems to be in excess, therefore no silver attacks the gelatine, and the prints are by many believed to be absolutely permanent.

This paper is received ready sensitised and keeps good for many months, provided it be well secured from light and damp. If kept for a long period, it should be placed in air-tight tin boxes. Its surface is wonderfully fine and of a slightly pinkish colour; a little care must, however, be taken in handling it; touching the sensitive surface should at all times be avoided as much as possible.

PRINTING.—Having been cut to the required size, the paper must be placed in the printing-frame in the ordinary way, care being taken that it is thoroughly dry. This paper prints of a rich purplish tone; the printing to be carried only to the depth required when finished. It is not necessary to tone the prints at once; they may be kept for a week or so, provided they are well wrapped up in black paper.

WASHING.—In washing, the prints should be placed face downwards, one by one, in the water, which must be changed four or five times, until it has not a milky appearance. The first water that is used for washing these prints should, however, be kept, as by this means a large percentage of the silver used in the paper can be preserved. As this paper is exceedingly sensitive, care should be taken that the washing and toning operations should be conducted in a subdued light. After the prints have been thoroughly washed, they are placed in a solution consisting of one part of alum dissolved in twenty parts of water. Here they should be allowed to remain for about two minutes, and afterwards well rinsed in water, when they are ready to be toned.

TONING.—By far the best bath for this paper is the one composed of—

(a) Water .....	3 ounces.
Chloride of gold .....	2 grains.



(b) Water .....	3 ounces.
Sulpho-cyanide of ammonium..	30 grains.
Hyposulphite of soda .....	1 grain.

These two are mixed together by adding one part of *a* into an equal part of *b*. The reverse will produce a precipitate. The following three gold baths can also be used :—

#### SODA TONING BATH.

Chloride of gold .....	1 grain.
Bicarbonate of soda.....	3 grains.
Water .....	8 ounces.

#### PHOSPHATE TONING BATH.

Chloride of gold .....	1 grain.
Phosphate of soda .....	20 grains.
Water .....	8 ounces.

#### ACETATE TONING BATH.

Chloride of gold .....	1 grain.
Acetate of soda .....	30 grains.
Water .....	8 ounces.

The soda toning-bath is ready for use immediately, but will not keep. The phosphate toning-bath is also ready for immediate use; but should not, however, be used more than once. It gives splendid rich purplish-brown tones, and is much used for landscapes. Another formula for an acetate bath for Aristotype prints was recently recommended to me by Dr. Liesegang as being very cheap and effective. Two solutions are made: 1. Fifteen grains of chloride of gold in thirty ounces of water. 2. Two ounces of acetate of soda in forty ounces of water. An hour or so previous to toning, a little of the gold solution should be added to the acetate solution—the quantity varying according to the number and size of the prints to be toned. This must be repeated before toning each batch of prints. “It has often been stated,” writes Dr. Liesegang, “that it is preferable to use a large quantity of gold in order to obtain permanency in the prints; but it must always be borne in mind that with certain baths much gold is required, which goes, not in the prints, but is reduced to metallic state in the bath. A blue-toned print is certain to have all the subchloride of silver substituted by metallic gold, and in the bath I recommend only a very small quantity of gold is wasted, as it is nearly all used up by the print. An Aristotype print toned in this way, one-half covered over by yellow paper, has been exposed to the light of a south window for the space of two months. So far, not a trace of bleaching or changing can be remarked.”

It must, however, be noticed that, with all the baths, save the two made up with sulpho-cyanide of ammonium, a slight loss is sustained, and, therefore, it is necessary to slightly over-print.

In placing the prints into the gold-bath, they must be thoroughly and evenly wetted, and kept in motion, or unequal toning will be the result. If the margin of the print tones quicker than the

centre, the gold-bath is too strong, and must be diluted with water. With the use of the alum-bath previous to toning, the action even of a strong bath will be quite equal; but it is certainly preferable to tone slowly, for the reason that a strong bath is likely to tone of a slaty colour; while by slow toning a vigorous, pleasant tone can be obtained, ranging from the richest chestnut-brown to a velvety-black.

On immersion into the sulpho-cyanide bath, the prints will be observed to turn quite yellow and then almost immediately into a brown, and then into a purplish-brown colour. As soon as this last-mentioned colour is assumed, they should be taken out with the *right hand*; and placed at once by the *left hand* (which should on no account come into contact with the other baths) into the fixing bath, without washing. If the toning bath contains too much gold, the prints will not become yellow, but immediately blue; more water must be added. The same bath can be used over again, but the operator must, in this, use his own discretion. If a large number of prints have been toned, and the bath appears rather weak, it is advisable to change.

**FIXING.**—The fixing-bath is made up as follows :—

Hyposulphite of soda .....	10 ounces.
Water .. .....	100 „

and should be kept as far apart as possible from the other baths. In fixing, from five to ten minutes is generally sufficient; but, by holding the prints up to the light, it is not difficult to ascertain if thoroughly fixed. A mottled dirty yellow appearance indicates insufficient fixing.

**COMBINED TONING AND FIXING BATH.**—The latest announcement of the firm who manufacture this paper is that the prints can be toned and fixed in the same bath. This bath is made up as follows, and was first recommended for albumen prints by Dr. Liesegang, in the “*Photographisches Archiv*,” as early as 1868. Two solutions are made :—

A {	Water .....	800 ccm.
	Sulpho-cyanide of ammonium .	25 grammes.
	Hypo .....	250 grammes.
	Acetate of soda .....	15 grammes.
B {	Alum .....	20 grammes.
	Water .....	200 ccm.
	Chloride of gold .....	1 gramme.

The solution A must be allowed to stand for twelve or more hours, and afterwards filtered. It will be found better to mix this bath in the open air, in consequence of the sulphurous acid that is liberated. I have myself tried this improvement with great success. The prints are taken direct from the printing-frame, and immersed into the bath. They sustain no loss whatever in the bath. Almost immediately they are immersed they are fixed. It is, therefore, possible to tone by strong



daylight. The toning is slow and, consequently, even, the time required being about half-an-hour. Any tone, ranging from a chocolate-brown to a deep purple, can be obtained. The prints are afterwards washed in several changes of water. This is undoubtedly a great improvement, and one that will be hailed with pleasure by amateurs, although I should consider that the question of the permanency of prints toned in this manner is rather doubtful; but that, of course, remains to be seen.

WASHING.—Upon removal from the fixing-bath the prints should be washed in the most thorough manner, although the time must be considered to be of secondary importance to the perfectness and number of changes of the water. Having been thoroughly washed, they are taken out and dried, by laying across a thick pole, or similar arrangement, but on no account placed between blotting-paper.

SURFACING.—The method of surfacing the prints already referred to is carried out in the following manner:—Some glass plates, large enough to hold, say, half-a-dozen cabinets on either side, powdered talc, cotton wool, a good supply of blotting-paper, and an india-rubber squeegee are all the necessary requisites. Place a sheet or two of the blotting-paper upon the table, and upon it one of the sheets of glass, which must be *thoroughly* clean. Now dip a small pad of the cotton-wool into the talc, and rub the glass well all over with it. Take a fresh piece of wool, and dust till none of the powder is visible, although every pore of the glass is filled with minute particles. After the prints are thoroughly washed, they are taken out of the water, and, without any drying or blotting, placed one by one upon the prepared glass. As soon as the one side is covered with prints, place a sheet or two of blotting-paper over the whole, and remove all superfluous water. Now remove the paper, and go over each print separately and carefully with the squeegee, removing all the air between the surfaces of the paper and glass, and again lay a sheet or two of paper over the whole, removing all the water. Now turn the plate over, and repeat the operation upon the other side. In squeegeeing, many operators prefer to lay a piece of india-rubber cloth over the prints; this prevents the tearing of the paper. When *thoroughly* dry, by placing a knife under one of the corners, the print will peel off with the desired glass-like surface. This may possibly appear to the reader a long and rather tedious process, but in practice it will not be found so. I have myself placed one hundred prints upon glasses in half-an-hour without any trouble at all. By employing a matt or ground-glass, a matt surface equal to platinotype can be obtained.

MOUNTING.—Cutting and mounting should be done in the ordinary manner; the best mounting solution is made by dissolving four ounces of hard gelatine in forty ounces of water; while hot, pour in one ounce of alcohol, well stirring. This is applied, while warm, with a stiff brush.

It is unfortunately a fact that the splendid glass-like surface of the prints, obtained when the prints are taken from glass plates in the manner just described, loses a portion of its brilliancy. In order to retain the full brilliancy of the print, it should either be mounted by touching the edges only of the back with the mounting solution, and, when covered with a piece of paper, the edges pressed down with a paper-knife, or the plan recommended for carbon prints should be adopted. This can be accomplished half-an-hour or so after the prints have been placed upon the glass, and while still damp. The mount, which should be of unglazed cardboard, should be first coated with starch or the mounting solution already recommended, and then placed upon the print while still upon the glass. This mount must, of course, be somewhat smaller than the print. When quite dry, the whole can be detached. The edges of the print are then cut level with the card. If a margin is required, it should either be printed in, or fixed on afterwards. Highly-glazed gelatine emulsion prints can also be obtained by coating the print with a thin collodion, and, after they are mounted, passed through a hot burnishing-machine, the surface having been previously rubbed with Castile soap dissolved in water. For myself, however, I must say that I prefer the original surface of the paper to the highly polished surface; or, better still, a print that has been taken from ground glass, giving it an appearance very similar to the much-admired platinotype pictures.

## HOW TO PREVENT SILVER PRINTS FROM FADING.

BY ROBERT IRVINE.



THE following paper, recently brought before the Edinburgh Photographic Society, describes a method of toning which, although not new, seems to be very little practised. It also contains many valuable hints concerning fixing, washing, and mounting prints.

“In response to a request made to me some time ago, I beg briefly to describe to the members the means I uniformly employ in making and finishing my silver prints. I claim for my process that it will prevent fading under ordinary favourable circumstances, and where the prints have been *kept from damp*. I may say that I have



never seen any fading in my work when it was fairly treated in the manner I am about to place before you ; and I wish to impress upon any who may desire to make trial of it, that they should be very particular to follow my method, otherwise I must not be held in any degree responsible for what failures they may meet with.

"In the first place, I may state that I prepare my paper and do my printing in the usual way. I have tried many kinds of toning baths in my time, but always fall back upon chloride of lime. My bath is made in this way :—

6 grains chloride of lime  
20 grains common whiting  
15 grains chloride of gold  
6 pints water.

"Allow the solution to stand aside for a few days before use. It will tone for a long time ; and, when it begins to show signs of exhaustion, is reinvigorated by the addition of a little gold at each time of toning. Nearly any description of tone may be had from it, ranging from warm brown to black.

"I think it essential always to fix with newly-dissolved hypo. The practice of leaving some of the solution previously made use of, I consider a mistake ; and though at the moment better results may be thought obtainable, still there is no question but it induces fading. After fixing, I put the prints under a tap furnished with a rose full of very small holes, which, while it helps to keep them in motion, does not break or crush them in any way. The vessel I use for the purpose is a wooden tub, the sides and bottom of which are pierced with a great many holes, which are fully a quarter of an inch in diameter—care being taken, of course, to see that the inflow is equal to the outflow, so as to keep the prints floating. After washing fully an hour, I take them out and lay them on a thick glass plate and with a smooth wooden roller press all the water out of them—at the same time, I believe, removing nearly all the hypo remaining. I then return them once more to the washing water, and put a good quantity of common salt along with them, which I think effectually helps to neutralise any traces of hypo that may be left. I let them now wash an hour or two ; after which it is and has been my practice for a year or two past, to take them out and put them into a fresh water in which a small quantity of alum is dissolved. After remaining and being moved in this for a short time, I gather them singly and wipe each print with a soft sponge and water, and then press them in a mass as dry as possible, when they are ready for mounting. The mountant I prefer is gelatine. Starches and pastes easily sour, and in time cause prints to fade.

"I do not pretend to be even a second-grade photographer, but I can distinctly say that during

the twenty-three years I have been in business, I never saw my prints fade if I adhered to the method I have just detailed.

"It has occasionally happened that when I was pushed for time, I have omitted to follow precisely the above form ; but in usual circumstances it is my invariable practice. I may say that I have prints in my show-cases and elsewhere that have been exposed to sun and frost for a long time, and they will stand examination as to fading, and come well out of it. I have hundreds of prints in boxes that have lain by me for many years unfaded ; and I shall be glad if these remarks prove of service to the profession in any degree, because it is one of the great reproaches of our beautiful art that, so far as silver printing is concerned, the effects, no matter how charming they may be to-day, cannot be depended upon to endure for any considerable length of time, and too often but for a very short time indeed, compared with other productions of art and skill."

## ARTISTIC PHOTOGRAPHY.

BY ADA S. BALLIN.



ALTHOUGH the title "Photographic Artist" is one laid claim to by all sorts and conditions of men, from the itinerant of Hampstead Heath and Brighton beach to the dweller on the King's-road and in Bond-street or Piccadilly, an artistic photograph is by no means so frequently met with as one might be led to suppose it ought to be, and the doubt will cross our minds that, if there is no very great verbal distinction, there certainly is an immense practical difference between a "photographic artist" and an artistic photographer.

The general public is inclined to believe, because photography acts by means of certain chemical and mechanical arrangements, that the process is simply mechanical ; and, consequently, that any one who possesses the necessary machinery and knows the thumb rules of procedure, is capable of producing a sun-picture equal to the best. As well may it be said, however, that all painters must have equal merits because all use the same paints and brushes. A world-famed artist, in answer to a query from a would-be emulator, once said, "I mix my paints with brains;" and, as in painting, so in photography, "brains" are the chief essential to all good work. Unless taste and reason are called upon in the study of the subject, the arrangement of the light, posing in the case of portraits, choice of aspect in landscapes, and general harmony of the various details, no excellence of result can be obtained, and any successes that may from time to time occur are purely accidental.



To become a really successful photographer, a certain amount of culture and refinement and a knowledge of the principles of art in general, and of the resources of photography in particular, are absolutely necessary. The study of character and physiognomy is also of very great value, the instinct for portrait effects, with which some seem born, being enhanced or supplemented by attention in this respect. Every sitter should be a subject of study to the operator, and in the case of strangers, a little conversation should be engaged in before the sitting commences, so that some insight may be gained into the individuality of the "subject," while the latter is at the same time made at his or her ease. Constrained attitudes and unnatural expressions may thus to a large extent be avoided.

The individuality of each person is, as a rule, marked by tricks of expression, habits of holding the head, hands, &c., postures, quite apart from the mere anatomical lines of the face and figure, which disappear under the clumsy treatment of an unskilled operator, and the loss of which cause the relations of the "subject" to exclaim, without really knowing why, "It isn't at all like!" In this may probably be found the reason of the fact that strangers generally see more likeness between photograph and original than do relations or intimate friends; the former look to the mere anatomical resemblance, the latter to the life of the portrait as shown in habitual expression. To secure a fine portrait several plates should be used, so that various attitudes, aspects, and lightings can be tried, and the best selected for printing. After practice on these lines, it will be found that a power of rapidly appreciating what is best suited to each case will be acquired, so that, although at first a much greater expenditure of time than is usual is required for each subject, in the end a most valuable habit of insight will have been gained, and it will take no longer to produce an excellent picture than it takes an ordinary operator to make a bad one.

Opportunities for study are constantly at hand, not only in the visitors to one's house or studio, but in every face one meets. In watching the expression of these—the play of light and shadow over them, the varied aspects of trees, rocks, and ruins seen in one's country walks, the handsome interiors one visits, the postures unconsciously adopted by man, woman, and child—valuable lessons may be learned, and experience gained for future use.

When I was a little child my mother read to me a story called "Eyes and No Eyes, or the Art of Seeing," which showed how much pleasure and knowledge may be gained by an observant child in its walks abroad, while the unobservant strolls dully on, taking its exercise as a troublesome duty. The "art of seeing" is one which ought to be very

much more cultivated than it is at present, and the habit of quickly comprehending details and their general relation to one another, is one of the greatest possible value. Inattention to seemingly trifling details is a frequent cause of non-success in photography. For example, an ugly hand, or even a deformed finger, appearing prominently in the photo would spoil the best picture; and even a beautiful hand becomes disproportionate if carelessly advanced too near the camera. In general, it may be remarked that hands are as characteristic of their owners as faces—so much so in fact, that in photographing criminals for purposes of identification the hands are invariably taken into the portrait, as less easily to be disguised than the face.

This being so, it is obvious that the hands deserve a much greater share of attention in posing sitters than is generally bestowed upon them. Looking at nine portraits of myself taken by different persons supposed to rank high as professional photographers, I find the hands are properly posed in only one; in one they are too long; in another too broad; in a third too thick; in a fourth too large; and so on. In the only photo in which they are well brought out, however, the effort to arrange them seems to have exhausted the operator, and led to the neglect of the head, which is placed quite askew, the nose coming out about twice its actual length. The perspective of the head is, after all, the most important point in portraiture. As a general rule, the camera should be placed in the same position in relation to the head as that occupied by a painter when painting a portrait—either on a perfect level with or slightly below the subject. If his or her neck be short, the lower position of the camera gives a little height, and prevents the appearance of the head sinking down into the shoulders, so often seen in photographs. If, on the other hand, the neck is abnormally long, the camera must be arranged accordingly.

While truth should always be sought in portraiture, justice ought to be tempered with mercy, and the beauties and defects of each sitter should be studied in order as far as possible to conceal the latter, while accentuating the former. For example, by a skilful arrangement of light, the thin can be made plump and the stout freed in appearance from corpulency. With a thin person the light should fall on the short side of the face, with the broad side in half-tint, and the lighting should be from as low a point as is possible with regard to the retention of delicate modelling. The plump subject, on the contrary, should be placed in the usual portrait light, with strong shadows, so as to reduce the roundness of the face.

All accessories, whether in the matter of dress or of details, introduced for the sake of effect, to



make up a picture, as I pointed out in a recent article ("Hints to Sitters," CAMERA for July), should be subordinated to the subject of the picture. This is especially the case with backgrounds, in which the most glaring and idiotic errors are frequently committed. For example, a child may be seen sitting on a carpeted floor, leaning against a dining-room chair; but, instead of wall and ceiling, a landscape makes up the background; or a young man in full tennis costume with a racket in his hand represented coming out of church. In one picture I have seen, two girls in ball dress, with bare necks and arms, are swinging on a common garden swing miraculously suspended between two marble pillars, with a background suggestive of Athenian ruins. The ingredients of this picture were certainly not "mixed with brains," and yet it was executed by a celebrated firm.

Things may be seen in photographs which are visible nowhere else in the external world—as, for example, a lady dressed in furs, with an Italian sunset for a background, and surrounded by tropical plants, or another holding up a sunshade while the trees behind her are loaded with snow. Figures are also quite commonly represented out of all proportion to their surroundings, as, for example, a gentleman several feet higher than the door or arch through which he is evidently supposed to have just passed, a child taller than the church spire or tree near which it is playing, or a lady on the seashore with a ship so painted in the background as to appear in danger of carrying off her back hair.

It is a great mistake to select too pronounced a background; those with undecided lines and faint figures are far more effective, and any figures there may be about it should always be placed so that the subject which naturally occupies the foreground shall not appear out of proportion. An error which often appears in otherwise good photographs is a contradiction in lighting, the design of the ground being represented as lighted from the left while the face and figure of the sitter are lighted from the right, or *vice versâ*. Elaborate backgrounds can only be properly utilised by the exercise of great discrimination, and, as a rule, it is better to adopt a plain ground, shaded from dark on the one side to light on the other, the face being placed with its lighted side opposite to the dark portion of the ground so that it may be brought into proper relief. It is, unfortunately, quite a common fault to place the face in such a position with regard to a light background that the one is hardly distinguishable from the other. I have before me an extreme example of this fault—the photograph of a group taken with a white cliff as a background, the result being that although the dresses and other details have come out with

extraordinary distinctness, the faces have entirely disappeared, with the exception of the eyebrows and moustache of one gentleman who happened to be rather dark.

The conclusion to be drawn from the above is that an artistic photograph is by no means a mere mechanical effect, since its production demands natural ability, study, the use of considerable discrimination, and a firm will, albeit exercised with a gentle and polite manner to control recalcitrant sitters, who are apt to consider that they know better than the operator in regard to matters of dress and pose. Photographers, whether professional or amateur, should not be satisfied with producing pictures only sufficiently removed from the absolutely bad as to just content the non-critical people for whom they are taken. It is said that Art should be worshipped for her own sake, and photography is an art which ought not to be degraded by her disciples either into a trap for getting money, or into a mere pastime. Whatever is worth doing deserves to be done in the best possible way, and we may hope, in the words of Milton, "by labour and intent study . . . . . joined with the strong propensity of Nature," to obtain in the future what is hardly known at present, except among a few skilful and enthusiastic workers, really artistic photography.

## SOME HELPS TO ENLARGING.

BY "DEXTER."



**N** the hurry and bustle incidental to, if not inseparable from, every-day life, we all have a tendency to work too much by rule of thumb, and it must be confessed that rule of thumb often turns out very good results. But, in spite of this, and of the old adage to the effect that an ounce of practice is worth a pound of theory, we cannot afford to give theory the go-by entirely. Theory is a useful servant, but a bad master, for those patient, plodding creatures who think of nothing else seldom turn out work which has the stamp of genius upon it. Theory holds them down in her rigid grasp, and they have not the pluck to try anything or dare anything that seems opposed to her teachings. If, on the other hand, theory be regarded as a reliable servant, to be consulted when difficulties occur in practice, her value will soon be recognised.

These thoughts came into my mind lately in consequence of watching a young experimenter, who was endeavouring to make some enlargements on bromide paper from small negatives, by means of an oil lantern. The negative was placed on the stage of the lantern, and its image was projected



upon the side of a wooden packing-case, which stood on the table in front of it. My young friend was endeavouring to make from his small negative ( $\frac{1}{4}$ -plate) enlarged copies of different sizes; and, to obtain the different sized images, he had, of course, to move the focussing surface either to or from the lens, as the image was required to be smaller or larger. But with regard to exposure he worked entirely by rule of thumb, or rather, I might say, by no rule at all. It was all guesswork, and, although he tried many pilot slips of paper with watch in hand, he failed to turn out any really correctly-exposed pictures. His failure was chiefly due to his utter ignorance of a certain law in optics, which may be found stated in the text-books as a thing which must be digested by the student, but which is seldom explained in a rational manner. Here is the law:—"The intensity of illumination on a given surface is inversely as the square of its distance from the source of light." This law, as stated (in the text-books), is generally followed by a diagram, consisting of a number of angles and circles, duly lettered, and followed by

number multiplied by itself—i.e., 4. The right exposure, therefore, will be four minutes. Removing the frame to position 3, we must once more square that number in order to arrive at the right number of minutes for exposure at this increased distance.  $3 \times 3 = 9$ . Therefore nine minutes will be the time. It is easy to see that when the printing-frame is removed to the farthest distance of all—which is four feet from the light source—the exposure will be increased to sixteen minutes. To make the diagram (Fig. 1) more explicit, the vertical squares 1, 2, 3, and 4 have been so subdivided that the number of spaces in each indicates the number of units of exposure, be that unit a second, a minute, or an hour. The same rule holds good for enlarging

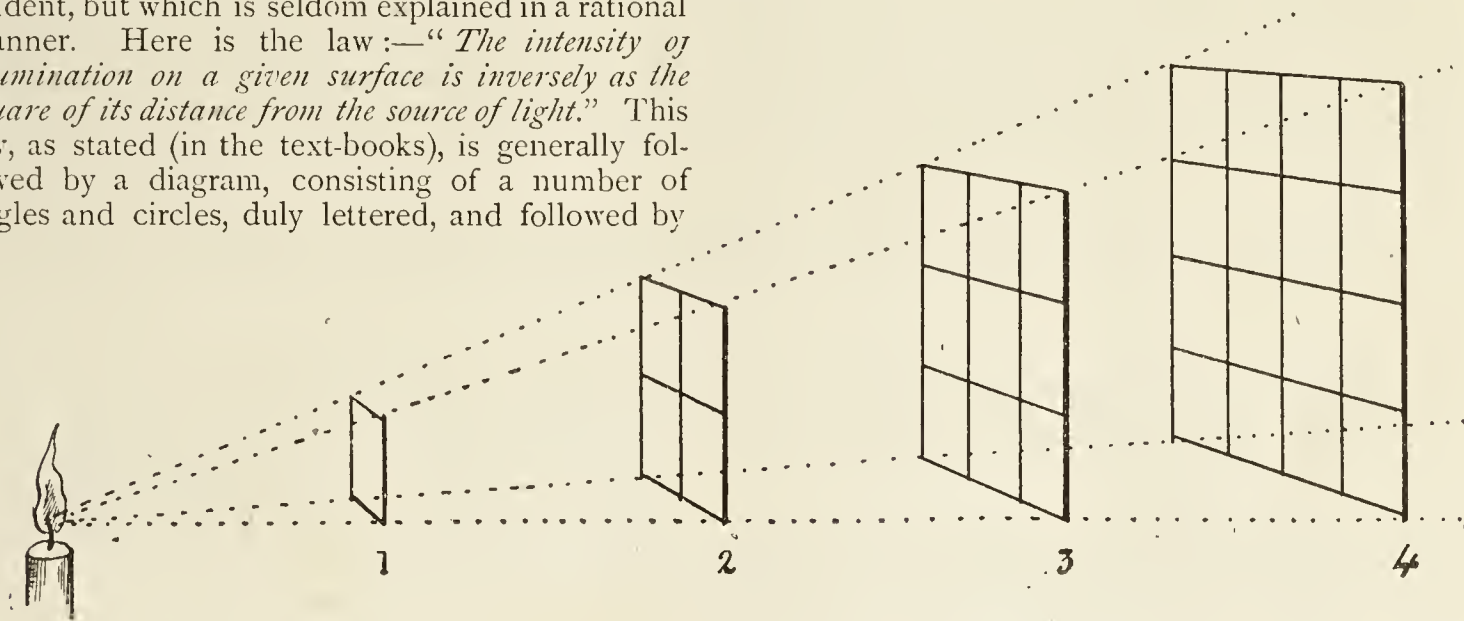


Fig. 1.

a long description. The student wades through this slough of despond, utters an irreverent remark to the effect that it seems "as clear as mud," and closes the book in disgust. Let us see whether this matter cannot be explained in such a way that a child can understand it, and turn it to practical use in photography.

Referring to Fig. 1, let the four squares numbered 1, 2, 3, and 4 be printing-frames placed at distances of 1, 2, 3, and 4 feet from a candle flame. Let us suppose, also, that we have ascertained by experiment that the plate or paper in the first position (No. 1) is sufficiently affected by the light if it remain there for one minute. (This is, of course, merely stated as a case in point. Bromide paper at such a distance would be sufficiently exposed, under a normal negative, in about eight seconds, while a chloride plate under such conditions would want two minutes or more.) Then, if we remove the frame to position No. 2—at two feet from the light source—the necessary exposure will not be doubled, as some might think, but quadrupled. For the square of 2 is that

operations. Thus, supposing that we are working with a magic-lantern, and that the necessary exposure at one foot from the lens is half a minute; at two feet the time will be two minutes; at three feet four-and-a-half minutes, and so on. The practical worker will have this little bit of theory in his mind whenever he is operating, and he will soon prove that the theory holds good.

Another help in enlarging, which will be found useful, is a little piece of apparatus—if it can be dignified by that expression—which I have lately made, and which I call an exposing-gauge. It is so simple in construction that any one can make it out of a couple of strips of cardboard. The arrangement is shown in Fig. 2. The size of the gauge is immaterial, but a length of twenty inches will be found convenient. A slip of card of that length, and about one inch in breadth, is cut with pointed ends, each point having a hole pricked in it as shown. By these holes, and with the assistance of a couple of drawing-pins, the contrivance can be readily attached to any flat surface upon which the enlarged image from the lantern is



focussed. Placed above this slip is another piece of card slightly shorter, and with a round hole in the centre. The two slips are bound together with strips of tape glued over their upper and lower edges, the two ends being left open, like a sleeve, for the reception of a slip of paper, like that shown in Fig. 3.



Fig. 2.

Fig. 3, as indicated, really consists of two slips of paper gummed together end to end. One is sensitive bromide paper, ten inches in length, which has been spaced out into five divisions, and marked *a, b, c, d, e*, with an aniline ink pencil. The other part is ordinary white cartridge paper, slightly longer than the sensitive slip. Its purpose is to serve as a handle by which to pull the sensitive paper through the sleeve, and also to

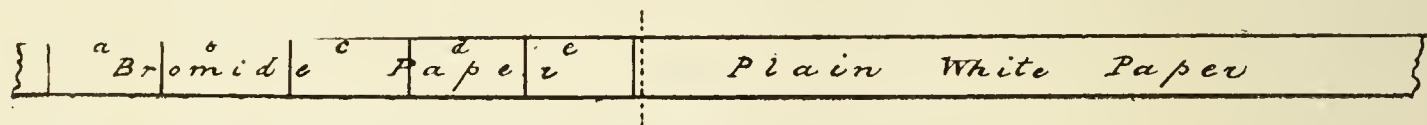


Fig. 3.

furnish a white surface upon which a small part of the picture can be focussed, that small part being confined to the central circular hole in the upper card.

Now let us see how the gauge is used in practice. It is first pinned on the focussing board so that a distinctive part of the image is thrown upon the central hole. In the case of a portrait this should be the eye. Having focussed carefully on the blank paper, the first division of the sensitive slip, which will be that marked *e*, is pulled in front of the opening. Let this be exposed for, say, fifteen seconds; then pull the slip onwards, and expose *d* for twenty seconds, *c* for twenty-five seconds, and so on. The gauge is then taken into the dark room, its slip of sensitive paper torn from its yoke-fellow, and carefully developed. It will then soon be seen which of the lettered spaces has received the correct exposure; and a memorandum noting time and distance of lens from screen can either be attached to the negative, or entered in a book against a number corresponding with a number scratched on the glass negative.

The same principle can be applied to printing in the printing-frame on bromide paper by gas, or lamp light. When the frame has been charged with its negative and bromide paper, support it upright at a distance of, say, eighteen inches from the turned-down flame. Now, place in front of it an opaque card, sufficiently large to more than cover the frame. This card should have a hole about one inch in diameter cut in it in one corner.

Turn up the light and expose for five seconds. Alter the position of the hole and give ten seconds, and so on. When the paper is subsequently developed these several exposures can be readily identified, and the negative can be labelled to the effect that it requires so much exposure at a given distance from a flame. Thus—Bromide paper,

18 in. 25 sec. This negative will then be an infallible guide for the exposure of negatives of a similar type; for a systematic worker—unless he be quite a beginner—will fall into the way of producing negatives of much the same character and strength, and printing from them by lamp light will then become an easy matter to him. Bromide paper positives are little if at all inferior to platinum prints so far as appearance is concerned, and

although it is a moot point whether they be as permanent, I can certainly say, from personal experience, that they will not show any change in six years. It is, of course, understood that they must be thoroughly fixed and thoroughly washed if this permanence is expected from them.

## LANTERN TRANSPARENCIES BY THE WET COLLODION PROCESS.

BY W. GOODWIN.



WE abstract the following notes from a paper recently read before the Glasgow and West of England Amateur Association, a copy of which has been kindly forwarded to us by the author. First, as regards apparatus. Here is a plank of such length that, when one end rests on the window-sill and the other on the floor, it will point to the sky, clear of chimneys, &c. On this board are nailed two runners, between which the camera can slide backwards and forwards. Across one end is a little platform with a raised ledge at right angles to the runners, and on this rests a box to carry the negative, the said box sliding against the ledge and being raised by the platform, so that the centre of the negative is opposite the lens when the camera is in its place. The camera may be your ordinary outdoor one, but it is better to have a quarter-plate wooden camera of



the old-fashioned, wet-plate style ; or, better still, to make one out of odd material, as I have done. It is not elegant, but serves the purpose. I recommend a special camera because it is in every way best to work by daylight. Now, few of us have much leisure by day, and it is advisable to have a camera that you can leave always in place, and focussed ready for work, thus leaving more time for making slides. However, should you prefer to use your everyday camera, it will be necessary to make a carrier for the small plates, which should be built up of glass strips, with corner-pieces cemented on with marine glue. Wooden carriers will, sooner or later, give foggy plates, and cause bad language in the dark room.

The box for holding the negative should have a hole cut in the bottom just the size of the negative, and both box and camera should be well blackened inside. Lampblack stirred up in a strong solution of gelatine is the handiest thing to use, and it is a capital thing for filling up leaks and making things light-tight.

The camera, if home-made, should have sufficient extension to admit of slightly enlarging part of a negative, if required, and it should also close up sufficiently to take in the whole of your largest negative. The actual length will, of course, depend on the focal length of the lens used.

The dark slide may be either a special wet-plate slide, or an ordinary double dark cell. I use a quarter-plate double slide, having glass corner-pieces cemented into the deepest half ; but if you use a larger slide, then the glass carrier already mentioned will be required.

The lens should be of the rectilinear type, but a single lens *may* be used if nothing better is available ; it should be of short focus, if possible, and probably the very best lens for the purpose would be a portable symmetrical, on account of its covering power. I use an  $8\frac{1}{2}$ -in. rectilinear, which works well with stop *f*-sixteen ; but if I had a shorter one I should use it.

For focussing I put the dark slide in place, and insert a collodion plate, sensitised, washed, and dried. A finer surface would be difficult to find, and accurate focussing is easy on such a film : ground-glass is much too coarse. This film being actually the same as the plate about to be exposed, and being in the actual dark slide, perfect register is a certainty.

Having thus briefly described the apparatus, I shall now show you how to use it.

First of all, however, I should like to speak about the light to be used. For sake of demonstration, I am going to use magnesium ribbon to-night, but if the best results are to be obtained, good daylight should be used. For ordinary negatives diffused light is best ; but if the negative is dense, then direct sunlight should be used,

ground-glass being placed between the sun and the negative to ensure even illumination. For a weak negative, diffused light, with ground-glass, will give the best result.

Now I take the baseboard and place it on the table, and, having fixed the negative in its place on the bottom of the box, I lay the box on the platform, close up to the ledge ; then, putting the camera in place between the runners, slide it backwards and forwards till I get the required amount of the picture on the focussing screen and clamp it. Then, placing a light board along the top of the camera and negative-box, I cover the intervening space with the focussing-cloth, and, using the focussing-screen and a magnifying-glass, I proceed to get the greatest possible sharpness.

When working by artificial light the negative may be illuminated by turning the lantern on it, or by placing a paraffin lamp close to it, in either case putting a sheet of ground-glass behind the negative to diffuse the light. It must be distinctly understood, however, that I do not recommend artificial light, and I am merely about to use it in order to show you the process of working wet-plates.

Everything is now ready except the plate, and I shall proceed to say something about the chemical part of the process while getting it ready.

*(To be continued.)*

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## ROYAL JUBILEE EXHIBITION, MANCHESTER, 1887.

THE various works in connection with this important undertaking, which will be opened next spring, are being rapidly pushed forward. The Exhibition will comprehend not only the industrial and textile productions of the vast district of which Manchester is the trade centre, and the machinery used in their manufacture, but a considerable space will be devoted to painting and other pictorial art. It has been decided that photography shall also be amply represented. A Photographic Sub-section has been formed, and has just issued a circular asking for contributions. In this it is pointed out that photography, belonging entirely to the period comprised within the reign of her Majesty the Queen, is a subject which may be very fittingly represented in the Exhibition, and announces that such a portion of the available space as may be found necessary will be devoted to a chronological history of the photographic art. The portion of the vast building which will be given to photography will allow of exhibits for both wall and floor space, and intending exhibitors are advised to make the earliest possible application for space, addressed to the Manager, Royal Jubilee Exhibition, Albert-square, Manchester. The Photographic Sub-section consists of Mr. Abel Heywood, jun., chairman, and Messrs. Alfred Brothers, W. J. Chadwick, Warwick Brookes, T. Harrison, A. F. Lafosse, J. S. Pollitt, and E. Leader Williams.



## THE CAMERA CLUB.—DECEMBER CONVERSAZIONE.

THE third social gathering of the series, on Dec. 13, was as successful as those of the preceding months. Excellent music was provided by members and friends, and the proceedings were characterised by the greatest animation. More than forty members were present. Mr. D. P. Rodgers directed the carrying out of the programme, which included violin solos from Messrs. Koopman and Homan; flute solos by Mr. Reeve and Major Briggs; recitations by Messrs. A. P. Wisdom, O'Farrell, Blanckensie, and Gifford; and songs by Mr. Lovett King. A trio for violin, flute, and piano was exceedingly well rendered by Messrs. Koopman, Reeve, and Bruce. Mr. Koopman met with a very enthusiastic reception for his tasteful and delicate rendering of his violin solos, and Mr. Lovett King's humorous songs (including a new one, entitled "A Rural Railroad Ride") received hearty encores. Mr. G. F. Bruce presided at the piano. Mr. O'Farrell gave a humorous address, describing interviews with leading amateur photographers.

## MANCHESTER AMATEUR PHOTO- GRAPHIC SOCIETY.

THE above society held a soirée and exhibition of members' work in the lecture-hall of the Manchester Athenæum, on Saturday, Dec. 18, 1886.

Members and their friends were admitted free by ticket. The soirée and exhibition, which was open from six to ten p.m., was very well attended; between six and seven hundred ladies and gentlemen were present.

Over six hundred photographs, the work of the members, were exhibited on the walls and on stands, and during the evening J. G. Jones, Esq., the hon. treasurer, gave three lime-light lantern exhibitions, the first two consisting of a choice selection of slides, 140 in number, made by the members during the current year; the third being a series of effect slides which were elaborately prepared, and which received quite an ovation from the audience.

The President, the Rev. H. J. Palmer, M.A., took the chair at seven p.m., and, in a short address, welcomed the visitors, and congratulated the members on the large and imposing show of beautiful pictures, and also remarked that "he hoped this would be the inauguration of a series of annual exhibitions."

The proceedings were enlivened by a programme of vocal and instrumental music, performed under the direction of Mr. William Stanley.

A novelty in the lantern display was the use by Mr. Jones of gas compressed into steel bottles instead of gas-bags. The gas at the commencement of the exhibition showed, by the gauge attached, a pressure of over ninety-three atmospheres, or about 1,400 lb. per square inch. This enormous pressure was controlled by means of Messrs. Oakley & Beard's patent governor. By these Mr. Jones showed a brilliant fifteen-foot disk at a distance of sixty-five feet from the screen.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

—o—

CAMERA.—Thank you very much for your kind letter and its suggestion about the album. We shall be most happy to insert a letter from you upon the subject, but we cannot afford time to undertake any correspondence in connection with the scheme. "Our poverty (of time) but not our will consents" to this refusal.

F. A. W.—1. There is no reason to suppose that cold has any effect upon the sensitiveness of dry plates, although there is little doubt that it has upon developing solutions, for chemical action is commonly enhanced by heat. For this reason you will find that it is customary to alter formulæ a little for extremes of heat and cold. For instance, less restraining bromide is necessary in winter-time. 2. Such a light as you describe should be suitable for the work you mention, but we cannot say for a certainty that the particular plates named would respond. Try Cadetts' rapid plates, to be obtained of Hinton & Co.

A. M. H.—We have written to the Cape for the information which you want, and must ask you to wait patiently until the mail brings an answer. But, if you like to defray the cost, we will telegraph to our correspondent with the greatest pleasure.

ALBUMEN.—We are willing and, indeed, anxious to notice any improved apparatus or process, if it really represents something good. The CAMERA is strictly impartial in this matter. If we have any enemies, we should wish to heap coals of fire upon their heads in this particular manner, if only their productions be worth it.

MUM.—We are sorry that we cannot publish your notion. It is a very good one, but, unfortunately, you were anticipated by about thirty years. Will give you chapter and verse if you care to write again.

W. P.—There would be no objection to methylated spirit for the purpose indicated if you get it from a reliable dealer. The stuff bought at the oil-shops, under this name, is often quite unfit for photographic purposes, and is often confounded with a gummy preparation used by French-polishers, and known as "methylated finish." Even if this confusion of terms is not made, the spirit is often poured into your bottle through a funnel used for varnishes and other contaminating compounds. It is best, after all, where only a few ounces of alcohol are in question, to use pure spirit.

## NOTICE.

Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.

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# ✱ THE CAMERA ✱

A Monthly Magazine for those who practise Photography.

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## Sayings and Doings.

**F**EBRUARY the 8th is to be a red-letter day for the Camera Club. There is to be an exhibition of photographs and apparatus, shareholders' and members' annual meetings, and a dinner. But the principal event of the day will be a general Photographic Conference, to be held at the rooms of the Society of Arts, at which papers will be read by Captain Abney, Mr. Adcock, Mr. W. K. Burton, Mr. W. H. Hyslop, Mr. Andrew Pringle, and Mr. J. Traill Taylor.

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THE periodical exchange of lantern-slides between the amateurs of London and those of New York is a very pleasant way of keeping up a feeling of good-fellowship between cousins so widely separated. We have just received an account of the manner in which the last batch of slides sent out by the Camera Club was exhibited in New York. Many of these slides, by some of our best amateur workers—Messrs. Duncuft, Dresser, Gale, &c.—seem to have aroused the greatest interest, not only because of their artistic merits, but because the subjects were characteristic of life in the old country.

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Now that orthochromatic plates are being advertised by several dealers, and are therefore within the reach of all workers, we hope that they may lead to some new phases of photographic work. One of the most important of these will be the possibility of working by gas-light—not

only for portraiture, but for copying. Those who, for lantern or other purposes, are accustomed to produce negatives from paper prints or engravings know full well how often the daylight fails them at the very time that they have arranged their apparatus for the work. With the new plates their difficulties will vanish, and they will have the further advantage of being able to time their exposures with the greatest accuracy, for artificial illuminants are not subject to that constant variation of intensity which is so characteristic of sunlight when filtered through the atmosphere of a large town or city.

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A VERY much diluted solution of hyposulphite of soda has long been used as an accelerator by those who employ the ferrous-oxalate method of development. M. Franck recently informed the Photographic Society of France that he had continued some experiments which he had made with another salt of sodium—*i.e.*, common table-salt, in order to accomplish the same result. He is convinced that this household requisite acts as a powerful accelerator, and he exhibited various plates to prove his point. M. Audra, no mean authority, corroborated these remarks; but another member, who, however, had employed pure sodium chloride, had failed in obtaining similar results. It was submitted that probably the foreign matters known to exist in table-salt—lime, magnesia, &c.—might probably contribute to the effects obtained by M. Franck.

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IN the not very remote days of collodion, photographers were required by the fire insurance companies to pay an "extra risk" premium for their business premises, for collodion is a most



inflammable compound. It seems that, in spite of the introduction of dry plates, this extra premium is still demanded—more, perhaps, from the natural tendency among us to allow the wheel to run in the same rut year after year, than from any unfair conduct on the part of the insurance companies. Photographers thus charged should represent the matter in its true light to the authorities, and they will, no doubt, obtain a substantial reduction in the amount at present payable.

+ + +

IN a letter to the *Photographic News*, Mr. Thos. Stokes calls seasonable attention to a fact which, although not new, is one which is not commonly known. During the development of some plates he found that the image would not come up with the usual quantity of alkali, although the exposure he knew had been all sufficient. He rightly attributed the failure to extreme cold, and remedied the mischief by adding warm water to the developing solution. We may mention that some workers have, under similar circumstances, adopted the plan of holding the negative over the chimney of their dark-room lamp. Others, again, secure local density by breathing upon the plate as it lies in the developing-dish, but not covered with the developer for the time being, through a tube of paper kept for the purpose. In all these cases chemical action is stimulated by the application of heat.

+ + +

THE report of the Manchester Amateur Photographic Society, just received, is a most satisfactory one. During the past year 74 members have joined the Society, which now numbers a total of 160. The balance in the hands of the treasurer is certainly a small one; but the flourishing little community has paid its way, and this with the subscription for membership at the modest sum of five shillings. Those in other parts of the country who are desirous of establishing a Society will be encouraged by such a report as this.

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WE are requested to give publicity to the fact that the fifth Channel Islands' Art and Industrial Exhibition will be held in Guernsey and Jersey, during April, 1887, under the distinguished patronage of his Excellency, Major-General Elkington, C.B., Lieutenant-Governor of Guernsey; his Excellency Major-General Wray, C.M.G., Lieutenant-Governor of Jersey, and of Mrs. Elkington and Mrs. Wray. In Section III. a prize will be offered for photographic portraits treated in the most artistic manner, and another prize for landscape photographs.

## LANDSCAPES AND THEIR COMPOSITION.

BY J. F. MOSTYN CLARKE.



COMING now to a consideration of landscape work, it is needless to say that for the successful making of pictures, everything depends upon the photographer's knowledge of the laws of perspective and composition.

Landscape teaching these so much more effectually and easily than portraiture, it is a more advisable course for the beginner to study the former a little before commencing his operations in the latter. Therefore this article will be devoted to landscapes and their composition.

The rudiments of all composition are the laws of perspective, for let a picture be painted and composed ever so well, the drawing of the figures in it be ever so full of life and movement, if it perspectively be wrong, the picture loses a great deal of its value, for it offends the eye capable of appreciating its other merits; and the reason for this lies in the definition of a perfect picture; being such that no line can be altered or removed without destroying it as a whole: hence it is necessary for the photographer to know and understand the laws of perspective, for he will then render with his camera, correctly and in the most agreeable manner, not only stiff subjects, such as streets and houses, but he will be able to recognise and understand the lines of perspective in open landscapes and seascapes, which, in reality, underlie everything, though there be not a straight line in the view.

There is not the least intention here to enter into the theory of perspective; but a statement of the principal laws will serve, as the map to the engineer, to guide the beginner in the right road, if he has not already studied art. They may be briefly stated as these:—

1. The line of sight is that line which is always on a level with the eye, and is known as the horizon line.

2. All horizontal lines parallel in the actual subject go to the same vanishing-point situated in the line of sight.

3. Lines parallel to each other and to the picture-plane, are assumed to have no vanishing-points.

These three rules or definitions may be said to embrace everything.



No. 1 can be observed every day; the best illustration of it being the sea horizon, or the line where the sky descending and the sea ascending meet and vanish.

No. 2, it will be seen, must be incomplete without No. 1, as it is a fact, for optical reasons, that objects must diminish as they recede; and to do that, lines starting from a point above the eye-level must, it is evident, come down, while those below must rise, otherwise the objects would not decrease in proportion; so, if to diminish lines must converge, there must be a point where they will meet; this point is given by rule 1.

Rule 3 is obvious, for only a limited length of lines parallel to the picture-plane can be seen when the object they are in is near; besides which, both there and when it is far, it, or the part of it where the lines are situated, does not go away from the eye; hence it does not diminish; hence the lines do not converge, but remain parallel—that is, in their real condition; while, if the head be turned to follow them, it is evident that they will converge, for the picture-plane is changed, the object being either in angular perspective or another side parallel to it. The bearing of this on photography lies in the use of the camera and its adjustments; for, applying rule 1 in open landscapes, much depends upon the position of the horizon-line in the finished picture; that is, if it be wanted to give the impression of looking down from a height, the line must be high in the picture; and *vice versâ*. The same with seascapes.

The application of rule 2 will be seen more effectually in architectural subjects, for when the camera is tilted without adjustment, and a street focussed, it may be made to appear as if it were on the side of a hill, while it is in reality flat, the lines being made to descend or rise too abruptly; perpendiculars will thus be thrown out, and one part being nearer the lens, and hence wider than another, the lines will converge, instead of remaining parallel; rule 3 being violated. Every photographer, in fact, should know the laws above referred to, in order that he may use his camera in obedience to them; for in this obedience lies his success. One who thinks he has, as some have been known to do when beginning, only to set the instrument upon its tripod, and focus sharp, will never, it stands to reason, learn to make a picture; nor will he do so until he has learned how much besides technical excellence goes to the making of one; so far, indeed, from technical excellence improving matters, it makes them worse, and every beginner will do well to study and use one of the many small and concise books written on the laws of perspective.

In composing photographic pictures, there are many points of similarity and dissimilarity with

the painter's work. Among the former, he has to use the same laws as to his lines and their duties—both lines of the picture and the latent lines of perspective; he has to obey the same rules in the light and shade, and in the choosing of his relative foreground, middle-distance, and distance, and the arrangement again of their parts. Among the latter are the difficulties he meets with in the arranging of what he finds, so that all the parts will be perfect; for the photographer has in one process to do what the painter can travel miles to do; that is, in taking the cap from the lens for the necessary few seconds, he must have such a foreground, middle-distance, and distance, that each does its duty in the picture, no more and no less; while the artist can paint one here, another there, and alter them as he pleases; though it is fair to say that colour has a great deal to do with the artist's need for change, colour often being what he seeks, while colour is what the photographer has to contend against, for he must be able to see at a glance what effects and beauties come solely from it, and what from light, shade, and lines. Thus, with colour, he has little more to do than to leave it alone. In fact, one might almost go so far as to say that, putting aside a painter's skill in colouring and drawing, the photographer has, in the composition of a picture, the more difficult task.

The actual composition, when treated analytically, may be divided into three heads:—1. The uses of light and shade. 2. The lines and their duties. 3. The relations of these to each other. I will now give a few remarks showing how to use them in photography, so that the beginner may gather some notion of what to do.

The principal object in a picture is often the lightest, the eye being led to it through various grades of tone, beginning with the darkest, so that it goes from one to the other, resting long nowhere, until at last it reaches the principal object. In open views the foreground, to do this properly, must be dark, catching the eye first, and having nothing detaining in it, will carry the sight to the middle-distance, which is lighter in tone on account of the greater volume of light lying between us and it; from there, not having yet reached the farthest visible limit, the eye travels to the distance, in which is situated the line of sight or horizon; this naturally is the lightest part of the picture as having the greatest volume of light between us and it; the sky, also, will lead down to it, being darker overhead than where it meets the horizon. This will be found in nature when the distance is the most light. There is a natural tendency in the human soul to soar to things beyond, and a picture of the class treated above must enable us to do so, or the effect will be a weighing down, a sense of oppression; and we are



enabled to do so more thoroughly by being first led to the limits of the things that are. This volume of light combined with and shining

can be a picture without them, hence something more is introduced ; that is to say, lines.

Lines give the objects depicted their form or



Fig. 1.

“ By shallow rivers, to whose falls  
Melodious birds sing madrigals.”

through mist, is known as aerial perspective. It will be readily seen that a picture cannot be composed of only light and shade, any more than it

shape ; their direction gives distances and positions ; in other words, a draughtsman by the lines leads the eye from one to another, until the prin-





Fig. 2.—Reflections.



cipal object of the picture is reached, the art of picture-making lying in the skilful use of light and shade, and lines, choosing the most beautiful in their best positions; and it will be found that lines when in the best for their work, are generally in the most beautiful. The photographer, then, will find that not having colour to help him in giving relative distances and leadings, he must be the more skilful in using the lines he finds divested of their colour. This can be best explained by the accompanying cuts.

In Fig. 1, the principal object is the little bridge. On first glancing at the picture, the eye alights on the dark trees to the right of the stream; but there being here nothing to hold it, it is inclined to pass to the white of the water immediately beneath. This leads to the stones of the left bank, so it is gradually led along the bank to the bridge, where it rests some time before passing under, farther along the stream, and away up the hill-side. Again, start from where it will, reverse the above process, or begin with the rocky hill on the left, and the eye will always be led finally to the bridge. The duty of the dark bank on the right is to throw the sight off to something else. It can lead to the bridge itself, in which case the eye is conscious of the foreground while it looks at the bridge. Then, again, the lowest lines all tend to the same point, and form the sequence between the foreground where the spectator is and the object in the middle-distance at which he is looking, the line of the stream leading him away to the distance beyond, from whence he can soar into space.

Let us turn to Fig. 2. In looking at it we are struck with a sense of something wanting—a want of aim about it. There is a stretch of waste water in the foreground bounded by nothing—confusion leading to nothing; each part is beautiful in itself, but it leads no farther, and there is no perfection as a whole; besides, the picture is all middle-distance, there being no connection between where we are and what we see—the shadows in the water belonging to the middle-distance more than to the foreground.

Now we will consider what happened when this was taken. Whoever took it was, in the first place, unable to strip the scene of its clothing of colour; nor was he able to separate his picture from its surroundings. He stood on the bank and thought the view beautiful; when it was in the camera it was still beautiful, for its colour remained, though he should now have been able to see its faults. As he stood, he was conscious of the bank beneath his feet winding away to the right, that bank supporting the blue reflections of sky (which photograph light) in the foreground water; he cuts off that bank in the camera, and his picture begins in, or nearly in, the middle-distance. This is the

reason why so many views, appearing right and complete to the eye in reality, when focussed in the camera look wanting, for, in looking at nature, we are conscious of miles of landscape around us, and of the particular part of the view we see, starting immediately from beneath our feet.

Fig. 3 shows the composition for a different class of subject. In it the eye first sees the gate-post to the left, then it follows the direction of the gate itself, and, traversing the wall, reaches the door, situated in the centre of the principal object—the cottage—its perspective lines leading to the garden and hill beyond. The massive gate-post, with its shadows, and the trees above, balance the cottage itself, preventing the appearance of one-sidedness; while the lines of the gate, the walls running in the same direction, and those of the tops of the trees, each meet and balance the perspective lines of the roofs and wall parallel to them.

Imagine a picture in which all the lines run in the same direction, and in place of the eye being carried over it to a principal object, every line will lead to a different point, and, instead of being one picture complete in itself, it will be many, each unconnected, and with nothing to lead from one to the others. The beginner should now be able to find out the lines, and understand them for himself in the other pictures—and, indeed, in most pictures, with a little watching, he will observe the method he unconsciously adopts when regarding them. It is this: The eye is first led directly to the principal object, afterwards studying surrounding detail. He can illustrate the fact by drawing the diagonal lines on a square of drawing-paper, when he will find his eye settle immediately upon their point of intersection. We may go further yet, and give an illustration from nature. In the web of a garden spider all the lines go to the central point, being bound together by a series of circles, which keep the eye from wandering outward; this example being more complete when the spider himself happens to be at or near the centre.

The beginner will find the best means of acquiring a more complete knowledge of the suggestions made in this article by studying the pictures of Turner, Constable, and others in the National Gallery, such as “Chichester Canal” or “Dido Building Carthage,” by the first, for lines; while for open landscapes, his “Crossing the Brook” should be observed. But the pictures likely to be most useful to the photographer are Constable’s “Hay-Wain,” “Cornfield,” and “Valley Farm,” these being specimens of purely English landscape composition.

Many works of great writers might, with advantage, be referred to for the confirmation of the



facts and methods given here ; but the writer will content himself by quoting only the advice given by Goethe to the artist Preller.

There is one more thing to which I called his attention.

I have seen many of his studies from nature ; they were excellent, and executed with great energy and life ; but they were all isolated objects, of which little can afterwards be made when one comes to inventions of one's own. I have now advised him never for the future to delineate an isolated object, such as single trees, single heaps of stones, or single cottages, but always to add a background and some surrounding objects.

And for the following reasons. In nature we never see anything isolated, but everything in connection with something else, which is before it, beside it, under it, and over it. A single object, I grant, may strike us as particularly picturesque ; it is not, however, the object alone which produces this effect, but it is the connection in which we see it, with that which is beside, behind, and above it, all of which contributes to that effect.

Thus, during a walk, I may meet with an oak, the picturesque effect of which surprises me. But if I represent it alone, it will, perhaps, no longer appear to me as it did, because that is wanting which contributed to and enhanced the picturesque effect in nature. Thus, too, a wood may appear beautiful through the influence of one particular sky, one particular light, and one particular situation of the sun. But if I omit all these in my drawing, it will, perhaps, appear without any force, and as something indifferent, to which the proper charm is wanting.

Further : there is in nature nothing beautiful which is not produced (*motiviert*) as true in conformity with the laws of nature. In order that that truth of nature may also appear true in the picture, it must be accounted for by the introduction of the influential circumstances.

I find by a brook well-formed stones, the parts of which exposed to the air are in a picturesque manner covered with green moss. Now, it is not alone the moisture of the water which has caused this formation of moss, but perhaps a northerly aspect, or the shade of the trees and bushes, have co-operated in this formation at this part of the brook. If I omit these influential causes in my picture, it will be without truth, and without the proper convincing power. Thus the situation of a tree, the kind of soil beneath it, and other trees behind and beside it, have a great influence on its formation.

An oak which stands exposed to the wind on the western summit of a rocky hill will acquire quite a different form from that of one which grows below on the moist ground of a sheltered valley. Both may be beautiful in their kind, but they will have a very different character, and can, therefore, in an artistically-conceived landscape, only be used for such a situation as they occupied in nature. And therefore the delineation of surrounding objects, by which any particular situation is expressed, is of high importance to the artist. On the other hand, it would be foolish to attempt to represent all those prosaic casualties which have had as little influence upon the form of the principal objects as upon the picturesque effect for the moment.

In choosing and arranging subjects for photographic pictures, the photographer, especially the beginner, must accustom himself to see without colour, and the foreground should be as bold and plain as possible when there is intricate detail in the middle distance and distance, else there will be confusion. Boldness in the foreground also gives the feeling of nearness, assisting the connection between ourselves and the picture, which we would have felt in regarding the view.

Colour in nature prevents confusion in the detail : for instance, in Fig. 2 there was no confusion in the distant trees, the variety of tints in the lights and shadows of each tree being in themselves enough to prevent it, leaving out of the question the different species growing together of different colours. Another thing to be remembered is the photographic action of the colours themselves. Red absorbs light, and therefore photographs dark ; yellow absorbs less light, and so comes out less dark ; while blues come out light, reflecting more than they absorb.

If aerial perspective be wanted, placing the distance slightly out of focus will give the desired effect, while the middle distance and farther foreground are kept sharp. In most cases the immediate foreground, especially when a road, should be focussed a little indistinctly, in order to make it appear as it does to us in reality ; for when the eye is looking at one particular object, it is only conscious of, and does not see, surroundings, these being out of focus to it. It is also good to have this part of the picture a little less sharp, for it will not then detain the eye. Indeed, when any special part of the picture is required to be seen, such as a figure in a garden, everything but what is near it may be left indistinct ; then the eye can rest on nothing but the principal object—only, in such a case, the light and shade must be skilfully managed.

For the assistance of the beginner, a short account of the management of the camera in the field will be useful. We will suppose him to have purchased apparatus, and to have selected the subject for his picture. (The writer's method of selection is this—on arriving at a place where it is his intention to make some pictures, the first care is to ascertain in what direction the most likely spots lie. This may be done either by inquiry, which is difficult, as few of those of whom he can inquire will understand him ; or by mounting some rising ground and looking about, when any wooded spots can be at once picked out. Then he takes a walk to some or all of these, looking at everything, but not specially composing any picture, simply taking in the beauties. After a day or two, when he has become familiar with the places, he takes his camera and begins work.) The plates he will have placed in the slides the evening before, after dark, by the aid of a ruby travelling lamp, numbering each carefully on the back, and entering it opposite the number in his note-book corresponding to the one it faces in the dark slide ; in other words, he will find his three slides numbered on each face, one to six, each number representing a plate ; then, if he have one of Openshaw's exposure note-books, he will find a column marked "number of slide," another "progressive number ;" so, having numbered the plate facing slide one, he enters that



number in the "progressive" column, filling up the particulars when the plate is exposed.

Care should be taken that nothing is left behind. It is a good habit to keep everything in the case, especially the binding-screw that holds the camera to the tripod, if it be not a fixture, which is the better form.

Having arrived at the scene of action, he unstraps the tripod, and slides each leg out as far as the work demands, and erects the camera upon it, seeing that the glasses of the lens are bright and free from dust. He then places the stops upon the base-board, levelled by means of the legs, in a position, near as can be judged, correct. This done, he glances at the ground glass under the focussing-cloth, and, if it be nearly right, places a large medium stop (we suppose his lens to have  $f/4$ ,  $f/8$ ,  $f/16$ ,  $f/32$ ,  $f/64$ ), say  $f/8$ , in position, then turns the focussing-screw until the middle distance is sharp. He can now see what his composition is, and can move the instrument round on its axis if necessary, cut off from the foreground by raising the lens in front, or if he require more foreground, he can obtain it by throwing out the front leg, which will slope the camera forward, counteracting the effect on the focus by swinging the back nearer the perpendicular; then he replaces the largest stop by the one that gives the correct range of focus. This will be learnt best by experimenting with the camera, focussing first the foreground without any stop, and gradually extending the range of focus with the smaller. He will then find that there is, with a small stop, a considerable range within which an object is in focus, although there is in reality only one point at which it is really sharp. Having arranged his picture to his satisfaction, he screws tight all the screws of the legs, and the binding-screw, and before placing the cap on the lens, takes a last look at the picture on the ground glass. Finding all correct, he puts in the slide and draws out the shutter. It may here be remarked that the habit should be acquired of exposing the slides in their order from one to six. In fact, in all mechanical operations the habit of consecutive order cannot be too highly recommended—such as touching with the hand the front of the lens before putting in the slide, to see if the cap be on, sliding in the shutter of the dark slide immediately after exposing, always keeping the slides themselves under cover, and many other habits that help by their method to the doing of things perfectly.

To return to our photographer, he is now ready to expose the plate, and most probably, being a little in doubt as to how long to expose it, a few words here may help him. The best way to understand exposures is by setting one standard to work from. We will take as ours the open land-

scape, which requires a very short exposure, being second in brevity only to sea and sky, by reason of that volume of light already spoken of. This must never, or very rarely, have more than a second of time. The writer may remark that open landscapes make, as a rule, in photography, poor pictures, unless the lines of the hills or other features be very beautiful, almost all fine effects in the view lying otherwise in the colour.

There is considerable latitude in the duration of exposures. For instance, for a three-second exposure, anything between one and five will give a good result, but the three-second will give the best. This fact is very convenient, and may be made good use of in the following manner. Suppose we have a scene focussed, consisting of a stream, with broken water, trees overhanging, and a distance delicate in light detail. We can, by a combination, render the view in one exposure, instead of using, as some photographers would, two plates. Thus, the broken and moving water should have about three-quarters of a second; that is to say, anything between a quarter and one and a-half will give a good result. The wooded part would want three and a-half seconds, or anything between two and five would give a good result. So, by giving one and a-half we have the water a little indistinct as to minute detail, which gives it movement, and the trees also are just a little wanting in detail, which is good, for reasons given in the remarks on composition; whilst the distant glimpse through the trees and along the stream, which is the principal object of the picture, has its exact right exposure. From these four different exposures the beginner will, or should, be able to deduce the exposures for any other out-door subject. It is, in some cases, necessary to use two plates for a single subject, such as an interior with views seen through the windows; for during protracted exposure necessary for a room, all the outside detail must be lost. It is also good in some cases to use two negatives for one view, such as a bright sea with heavy foreground, in which case the exposure must be given without moving the camera in the slightest degree, each plate being afterwards developed for its special subject.

The greater the distance in the picture the smaller the stop must be, to have it all in focus; theoretically, the stop, to have everything in focus, should be the size of a pin-point; but this, of course, would protract the exposure so much as to render the photograph almost an impossibility. Using a small stop also prevents the spreading of the rays, that makes the distance look as if it were mixed up with the sky, which appearance is often met with in photographs of open country. In pictures of nearer objects, such as Fig. 3, a larger medium ( $f/8$  or



*f*/16) is better—the focus will not then be so sharp, nor the objects look so cut out; but it must be borne in mind, as a general rule, that the larger the stop the shorter the exposure.

A statement of the conditions under which the originals of the Figs. were taken may be of assistance to the beginner:—Fig. 1 was given two and a-half seconds, with *f*/32 stop, at about one o'clock, in sunshine. Fig. 2, four seconds, with

own dark-room. It is, however, an excellent plan to take a few necessities, such as three small bottles of developer, hyposulphite of soda, one dish (two if there be room), some paper, and a little toning solution, for small plates. Pie-dishes or soup-plates can always be borrowed for washing and fixing. Then the photographer has it in his power to test his exposures before using his larger plates, as—even after many years' practice—sub-



Fig. 3.—A Cottage Home.

*f*/32, on a showery day, in sunshine, about noon. Fig. 3, four seconds, with *f*/16 stop, about noon, on a sunny day. All these were taken early in May.

It is not a good plan, unless the conveniences are great, such as those of a country-house, to develop the plates, especially if they are larger than half ( $6\frac{1}{2} \times 4\frac{3}{4}$ ) when away on a tour or visit; but rather to keep them till leisure can be given to the work, with the convenience of the photographer's

own dark-room. It is, however, an excellent plan to take a few necessities, such as three small bottles of developer, hyposulphite of soda, one dish (two if there be room), some paper, and a little toning solution, for small plates. Pie-dishes or soup-plates can always be borrowed for washing and fixing. Then the photographer has it in his power to test his exposures before using his larger plates, as—even after many years' practice—sub-



The beginner should not be in a hurry to do a great deal of work after he has once mastered the developing. Let him remember that an hour's careful study, with a failure for result, does him more good than a work done in five minutes chancing success. In fact, it cannot be too firmly impressed upon him that patient and persevering practice is the only method by which he can be taught. It is so in all things, especially in art. Nothing can be done without labour.

## WITH A CAMERA IN JOTUNHEIM.

BY LOUIS HYDE.



AR up in the heart of central Norway, three days' journey from Bergen, and as many from Christiania, lies a region unknown to the ordinary run of tourists—who, at the most, gain a fleeting glimpse of its higher snow-fretted summits as they pass in their carriages through the more accessible scenery of the lower valleys; and picturesquely named Jotunheim, in memory of the frost giants of the old Scandinavian mythology. Until 1820, the reindeer, lemming, and the rype held dominion over its inhospitable solitudes, disputed only by occasional wolves and bears; and, for long after, its wild fjelds and gloomy valleys were known only to lonely cowherds and sæter-girls, who sang their quaint cattle-calls to their flocks on the margins of the lakes. Little explored even to-day but by the Norwegians themselves, and inhabitable for but two short summer months, Jotunheim is now accessible to pedestrians willing to rough it, through the well-directed exertions of the Norske Turistforening—a society which has caused five log-huts to be erected in the district, eight to ten hours' journey apart, for the shelter of travellers, who, by joining the club, gain the preference over non-members in the matter of beds and boats; which has fixed tariffs for guides, and placed rough plank-bridges over some of the deeper glacier torrents.

A charm of Jotunheim—by no means its least—is that it is so far removed from the hurrying throng of “globe-trotters” as to be still quite undisturbed by the tourists who scatter their gold about to astonish the natives, in a vain attempt to ruin their simplicity; bullying them, and grumbling at the accommodation; a class happily snuffed out long before it reaches Jotunheim. The accommodation is—may it always be—rough; while the utter absence of roads, the extreme scarcity of paths, with the general roughness of the ground, combine to make walking more fatiguing than among the Swiss mountains. The valleys, almost without exception, lie upwards of three thousand feet above the level of the sea; higher, that is,

than the limit of the pine. Beyond a few birches, which struggle for an unhappy existence in some sheltered spots on the lower levels, or trail along the ground with the fragrant juniper and the arctic willow, there is little vegetation, save bright-coloured lichens and reindeer-moss, to relieve the wide expanses of bare grey rock and glittering snow which cover this vast elevated plateau.

Tourists, who have only a limited time to spend in the country and make the most of it along the more-frequented routes, come home with the impression that the rounded, ice-worn, mountain-tops, more remarkable for massiveness than for their individuality—a characteristic physical feature of Norwegian scenery—are so general over the whole country that, beyond two or three well-known exceptions, there is not a respectable peak in Norway worth the name south of the Arctic Circle. Those who have time to ramble in Jotunheim are impressed very differently, for there are found giant peaks, wide-sweeping glaciers, far-stretching fields and slopes of ice and snow.

\* \* \* \* \*

The map lay spread on the trestle-table at Tvindehoug, the club-hut provisioned by Gudbrand Skattebo, a Jotunheim guide, with whom Brown was having a lengthy consultation. Standing at the hut-door Jones and I were idly watching a dark moving speck—a boat—far out on the tranquil surface of Lake Tyin, whose waters lap the shore below the log-hut. A reindeer skin was drying in the sun on a heap of stones by the water; the “skeeters” were abnormally active, and were being slaughtered in their thousands with a glove—a relic of civilisation. Just inside the door, in the small box that served as a kitchen, two sturdy Norwegian girls and a native guide were deep in a game of cards on the ledge under the small window, their high-pitched, agile voices keeping up a continual chatter; and it was in the midst of a storm of shrill hearty laughter proclaiming the end of a game that Brown came out and said: “It will be ten and a half kroner by the tariff on the door there. Come inside, and I will show you the route.” He picked out on the map a three days' round, adding: “I have expressly engaged Skattebo from the next hut, Eidsbugarden. Our baggage, two of his ponies will carry there, and I propose we walk there over Skinegg.”

A sharp scramble of an hour and a-half, under a tropical sun, through a rich garden of deep-coloured gentian and pinguicula; the cup-like ranunculus growing on the verge of the snow, faint pink here, shading into deep crimson on lower levels, and other Alpine flora which spread their delicate verdure down the steep mountain-side; then a short piece of almost flat mountain-top, and we were gazing over a sea of blue, snow-wreathed peaks, which rose from dazzling stretches



of glacier and snow. A few steps, and we could see the club flag floating over the wooden hut at Eidsbugarden, two thousand feet below.

Just as we passed through the gate of the enclosure round Eidsbugarden there emerged from the hut a scraggy specimen of Norwegian humanity, with a shock of dark-brown hair and a beard, chewing, with frequent expectoration—in a word, Skattebo. He was carrying a bundle of rugs belonging to two English ladies who had ventured thus far into Jotunheim. We were somewhat surprised when he announced that he was going to Tvindehoug, as he would barely have time to be back by night, and he would become our property on the following morning. We gently reminded him of this. Thereupon Herr S. remarked, in a way that seemed to nettle Brown, "I cannot go. I will get you another guide." Brown—who has a considerable amount of what friends, when they mean to be pleasant, call "firmness," "pigheadedness" when they don't—insisted that Gudbrand must stick to his bargain. While Brown harangued him in German, Skattebo contemplated his boots in silence, shifting the tobacco in his cheek. Once he shut an eye, aimed at a mosquito, missed it, and still doggedly maintained his unwillingness to accompany us.

He is a good Jotunheim guide, and we were determined not to exchange him for one who might prove less competent and less trustworthy.

At last he pointed to a rubicund little man with a great quantity of sandy hair on his freckled face, who was leaning against the doorpost of the hut and looking on, his twinkling eyes showing that he was enjoying the scene. "Ole Rösheim will guide you," he said.

There was no need to explain the situation to the jovial little Norwegian, though the dispute had been going on in German. Ole—to whom Eidsbugarden belongs—saying that as he was getting old, he no longer acted as guide, took Skattebo aside and talked long and impressively to him in a fatherly way, but with no visible effect beyond calling forth occasional grunts or a spasmodic "Nei, nei" from the expectorating Norseman. With a gesture that had something of despair in it, very comical with his jolly round face, Ole turned to us, and said in English, "The tariff was fixed a long time ago, and is rather low, and Skattebo will not go with you unless you pay four kroner (4s. 6d.) a day."

Brown replied simply, "A bargain is a bargain." So Skattebo took a parting shot at a fly on a stone as he turned on his heel and strode off, leaving us in a state of uncertainty as to whether we should see him again, and rather fogging over our bright ideal of "Norwegian honesty and simplicity."

After our evening meal—at which, as Jones

remarked, we were "reaping the fruits of that stupid affair at Babel," for we sat down with two Finns, a Swede, a Norwegian, and a German—Skattebo turned up, and in answer to Brown's "What time shall we start in the morning?" briefly replied "Syv" (seven).

How keen and invigorating was the frosty air as we left Eidsbugarden that August morning! The sun had not been up long, and the hoar-frost still sparkled on the ground. A morning thoroughly Norwegian—"Pig Veir" (peak weather), as Skattebo said, after we filed across the rickety plank which spans the swirling glacier stream flowing into Lake Bygdin. Our way lay up by the milk-white torrent which gives its name to the Melkedal, over a chaotic mass of loose boulder, left by a dying glacier. Strange must have seemed our contortions, had there been any one to watch us scrambling along, now poised on one foot on the sharp-pointed top of some huge ice-scratched boulder, now plunging into a hollow—the usual performance in most of the Jotunheim valleys. The greatest pace possible for a very active man over this stony ground, which the natives call "Ur," is something under three miles an hour, and this he cannot keep up for many minutes; but when three and a half feet of snow have fallen, this walking becomes very laborious and somewhat dangerous—and such a day we had, after being snowed up at one of these mountain log-cabins. My thankfulness that the camera was but quarter-plate was unbounded.

Soon we came to the fields of snow, and donned our blue goggles; and I may here mention that when prospecting for "shots" the sweeps of light and shade can be more accurately gauged through blue glass. All vestige of vegetation had ceased, but there were frequent signs of the recent presence of the reindeer and the lemming. For something under half-an-hour we made slanting tracks up a steep slope of dazzling snow, and then mounted a broad rocky platform, where there suddenly burst into view perhaps the most sublime, certainly the most characteristic, piece of Arctic scenery desecrated by the lens that day. There was an indescribable glisten over the seared surface of the sweeping glacier, from whose edge miniature icebergs were sent floating off on to the glassy surface of the lake. On either hand a blue cone of snow-draped rock stands sentinel clear cut against the cloudless sky. Then on, skirting two other Arctic lakes (5,100 ft.), thinly coated with last night's ice, and called, like the first one, Melkedalsvand, our own footfalls alone breaking the deathly silence, ourselves the only sign of life. The provisions—which Skattebo carried over his shoulder with my tripod, which he took a delight in setting up—we devoured at the foot of a glacier, which spread out fan-like



down the side of Uranaastind. Here is the menu :—

American tinned meat.

*Entremets :*

Rye bread. Chocolate.

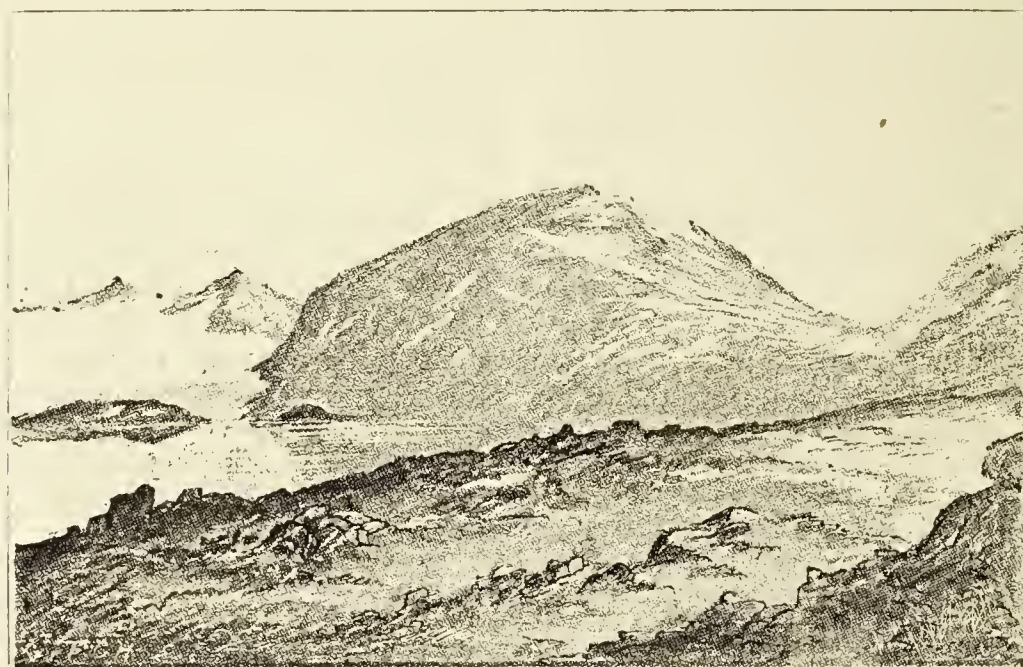
Hard-boiled eggs (Antique).

*Vin :* Port.

We diluted the wine at the glacier stream, which a little further on thundered down a cliff six hundred feet into the Skogadal, where, as we descended, scanty traces of vegetation reappeared, and in two hours we struck a faint cattle-track. Further down, where the low willow-scrub gave place to a copse of gnarled and stunted birches, a herd of goats was filing across the plank which bridged the torrent.

the room opposite the window ; while round on shelves were ranged piles of cheeses.

Jones flung his hat into a corner, and expressed our wants in the words, "Har De Melk?" Two other girls now appeared, and a huge wassail bowl of milk was brought from the third room, the dairy, and presented to each of us in turn. We did wonders with that bowl after our ten hours' tramp. It was a large one—we all washed in it next morning ! Our evening fare was of the very simplest kind : sour rye bread ; *fladbrod*, a kind of thin oatcake ; rich coffee, with cream so thick that we ladled it in lumps from a bowl with the only spoon the sæter possessed. But the crowning delicacy was the cheese. The best was nasty, the worst—in appearance like old brown Windsor



Lake of the Melkedal.

"Skogadalsböen!" exclaimed Skattebo, pointing to a heap of stones five or six feet high, surrounded by a restless crowd of goats engaged in licking a stone where there had been a little salt. "Here we sleep." Though we knew that "every hovel in Norway has a name and is marked on the ordnance maps," we were rather astonished to see a girl emerge from the heap of stones. It was a hut ! The sæter-girl, coming forward to welcome us, bade us enter, prefacing her request with the usual "Værr saa god" ("Be so good"). Stooping down, we filed through the low doorway, and stood gasping in a hole, ten feet by five, thick with pungent smoke from a birch-and-juniper fire in a corner. Rushing through the blinding vapour, we entered a rather larger room, with an open stone fire-grate under a hole in the roof ; a wooden table with two benches ; and a long couch of juniper twigs and sacking, that took up the side of

soap—unutterably vile. The variety was absent which the natives, for many reasons, preserve under a glass case, and, I should imagine, hand down as an heirloom from father to son.

Evening mists were gathering on the hill-sides, and the flocks were coming home to be milked, in expectance of salt on the stone before the hut-door. The glaciers between the jagged snow-clad peaks of the Horunger were glowing with a rosy light in the last rays of the departing sun. Suddenly a weird, penetrating wail swelled past us and died away among the hills in lingering echoes. Then for a few seconds there was silence. Had some Troll, or the Hill Sprite, so familiar in the peasant lore, returned to his old mountain haunts ? Again the long, plaintive wail swept down the valley, and the faint, distant tinkling of a cow-bell was borne towards us on the still evening air. A faint laugh made us turn towards another small



hut further up the hill, where two of the sæter girls sat by the door calling home the lagging cattle with the *lokken* horn, whose uncanny notes had just awakened echoes strangely in keeping with these wild fjeld solitudes. A few more times only would they cry their picturesque cattle-calls; then the sæter would be deserted, and the loud reports of cracking ice and the rumbling of avalanches the only sounds in Jotunheim.

It is towards the middle of June, when the snows on some of the mountain-slopes have given place to a rich growth of sweet herbs and grass, that an unwonted bustle disturbs the usual quiet at Dregni, a farm lying at the head of the Lysterfjord. Birch-wood milk-vats and metal cauldrons are brought out and cleaned, and all implements necessary in

covering was a sheepskin, they tapped extensively. A Norwegian can stand more of this sort of treatment than most people; but, had we not seen it, we could not believe that these maidens could survive two months of what we suffered. Perhaps familiarity, &c.

Much rain fell during the night, and the morning opened dull and rather misty. Something almost amounting to physical persuasion was needed to overcome the sæter-girls' shyness to face the lens.

The camera shipped, after a shaking of hands all round—a process which is the national way of saying, "Thank you"—we again crossed the stream, and began to ascend the opposite mountain-side, while one of the picturesque group by the salt-stone blew us a doleful *lokken* on the goat's



The Horunger.

cheese and butter making are made ready for the journey to the mountain pasture, where two months are to be spent by the daughters of the house in cheese and butter making alone in the mountain solitudes, while the men-folk store the hay by the fjord for winter use; and early one morning the cows, goats, sheep, and pigs are led from the homestead by two or three sturdy maids, with a pony laden with necessities. On the evening of the next day they reach Skogadalsböen, their shelter and the store for cheeses, till the snows at the end of August drive them home over the rugged storm-swept Keiser Pass.

From certain signs soon after we entered the sæter we knew what we had to expect from our beds of juniper; but in our most vivid imaginings we had not conceived of the untold thousands of active little animals which began to draw our blood immediately we lay down. One of us, whose

horn for "luck upon our journey;" and as we mounted into the clouds which clung to the hill-sides, we saw a long string of bleating goats winding down the grassy slope above the hut, and the three maids of Skogadalsböen waving a farewell.

Our guide now, to our dismay, revealed that he had never been to Vetti—where we intended to sleep—by this route before; but he dared say we could find our way by the cairns which the Forening had set up along part of the route. So we had to trust ourselves to Providence and Skattebo.

The clouds—very suggestive of washing-day—rolled along past us, and through the rifts we occasionally saw below us a thousand feet or so of the valley we were in; but the bottom lay at an unseen and unknown depth. As the tall, thick grass and stubbly underwood through which we waded were laden with moisture, we were soon wet



to the skin, and were beginning to feel pretty miserable, and that our only solace lay in chocolate, and in the luscious pale-green cloudberry, which grew abundantly here on the swampy ground, when Skattebo stopped abruptly, and we all came to a standstill, one behind the other. The next cairn was not visible. Gudbrand chewed contemplatively a few seconds, and then motioned us to stay where we were while he departed on a voyage of discovery, leaving us to exchange uncomfortable forebodings. Some time passed before we heard his whistle and found our way to him. Two hours of groping our way in this uncertainty, and we were clear of the clouds, but the sun still moodily hid his face.

Soon a small colony of huts came into sight, far below by a glacier-brook which meanders through the Fleskedal, and we hurried down to visions of frothy bowls of rich milk and *melkebanke*, a concoction to which Devonshire cream is a cipher. But why did Skattebo, who was on ahead, not cross the stream to the sæters, but sit down on a comfortless, cold, grey stone, and sadly meditate? The huts were deserted. The flocks had been led down sooner than usual to the lower pastures at the Vettismorka sæter; so we munched the chocolate of despondency, and plodded on. Another hour found us quaffing cream, with a goodly spread of cheese, and some square yards of the unsatisfying, everlasting fladbrod before us in one of the ten huts which form the Vettismorka sæter. We ate and drank as much as we conveniently could, yet the smiling sæter-girl was profusely vigorous in her hand-shaking when Jones laid a small coin, worth about sixpence, on the broad plain of her palm.

They have a great affection for the birch-tree in Norway, and use it for everything, from food to string. The shallow vats, full of milk and cream, which crowded the inner room of this hut were birch. So was the firewood. The door-mat—for they had a door-mat—was birch-bark. The roof had a covering of the bark; on the top of that they kept a hay-field, which was a good idea in the natives, for if a goat were inclined to stray, they ran her up a plank, and browsed her on the roof.

As we were passing by the Vettisfos, of guide-book fame, we hung on to a gnarled stump to look over a sheer fascinating precipice and watch the Morkadöla tumble down nine hundred vertical feet of bare cliff, lose itself, then unite again to rush thundering on towards the Sogne Fjord.

About three that afternoon we were under Anfind Vetti's hospitable roof, making selections from the portion of our host's wardrobe not then in use; for we arrived draggled and damp and ravenous, as was evident from the prodigal recklessness with which we had ransacked the store-

room. Brown, scarcely recognisable in trousers of grey homespun, many inches too short, in blue and white-striped stockings, and Vetti's most stylish efforts in the way of shoes, which bore close relationship to Irish brogues, was an incomplete edition of the wrinkled patriarch in a blue night-cap, who stood on the steps before another hut, grimly criticising the dissection of a goat we hoped to help devour at breakfast. The two Finns from Eidsbugarden, in their white University caps, arrived with their guide in time to see us in the glory of our borrowed plumes; and, while the lens was being levelled at the farm, as the sun was just topping the high mountain-walls of the Sogne Fjord, a large elk-hound came bounding up the valley, followed at a more leisurely pace by two be-knapsacked Christiania students. Countless the flasks of *salon öl*—the native beer—that went up after our five fellow-guests into the upper loft. Of the awful consequences of this we did not dream till we, selfish mortals, had seized the three beds on the ground-floor, retired behind our locked doors, and were trying to woo slumber—one of us, at least, in vain. Under the convivial influence of the *öl*, our friends aloft warmed from joviality to song, clinking their glasses and roaring their lively undergraduate songs well on into the night. When a slight lull in the festivities above brought only a monotonous mumbling of voices, and the dull, sentinel tramping of one restless spirit, I was dropping gently off. Just then the elk-hound grew excited over something, and began to scamper frantically about worrying it. In an instant I was wide awake, wondering whether it had a boot, or if it was a rat, and how big a rat, and whether that was the scrunching of its bones, and whether—sliding softly into sleep, when Jones set up a snore rivalling a fog-horn that burst into the room like a hurricane. Then I sat up and thumped the pillow, indignation surging in my breast, and seized the sheet to put it straight. But it came off altogether. It ceased directly it turned under into the bed! and I was investigating the reason of this when I fell asleep.

A friendly hand-grip and a flourish of hats to honest Vetti's parting "*Lykke paa Reise*" (Farewell), then our henchman shouldered the provisions, and we followed towards the steep cliff we had descended the afternoon before, and which from below seemed scarcely to afford foothold to the goats here and there filching from the heaps of birch-leaves stacked for winter fodder. A short way up we paused awhile to look back. There is a quaint, old-world atmosphere of comfort about the quiet mountain farm. A well-built guest-house of pine logs, on a stone foundation; a luxuriant growth of grass on the roof; a little apart the building for the winter store of hay and for the housing of the cows and goats; the *stabburs*, where



the salted meat, food, and clothing of the bonde and his family are stored through the winter, raised on piles to prevent the entrance of rats and mice, their strong, close-fitting wooden beams and moss-filled crevices telling of the care in building, as their hard, dark, weather-beaten walls told of their antiquity; the scanty crop of hay spread to dry on rails by the long log-house, where Vetti's retainers slept above the pigs inhabiting the lower part. And lastly, Anfind Vetti himself, smoking a contemplative pipe by the door, across which runs the legend:—

Naar vi gaar ind naar vi gaar ud  
Da tænke paa os, O milde Gud.

(When we go in, when we go out, then think on us, O gentle God.)

At the Vettismorka sæter we stopped again to drown our inward cares in goat's-milk, while the sæter girls flitted busily among the large flock of goats, calling each to be milked in its turn by name, giving it a little salt, and flinging it ignominiously aside as a *Maie*, a *Maanfrue*, or a *Palmeros* answered to its call.

At an altitude of three thousand feet the pine ceased, as we neared the Fleskedal sæter, whence the route was new. It is curious to note that the Norwegian birch, unlike the Swiss, struggles on above the zone of pine to within a thousand feet of the line of perpetual snow (5,580 feet in Jotunheim, *i.e.*, more than 3,000 feet lower than in Switzerland), growing more and more stunted with the elevation, creeping along the ground with the bitter willow and the juniper, and eventually disappearing at about 4,000 feet above the sea.

Here we were overtaken by the three students and their hound, and we walked together for some hours; two students of theology and one of law. The latter mentioned to me casually that they had been up late last night. I grated my teeth. He held his hat in one hand, and was rubbing the other over the bristles on the top of his close-cropped head; then he beamed through his spectacles and observed: "We also sang. Did you hear us?" "Did I——!" It was a lonely spot, and I had to separate to avoid bloodshed.

At the highest point, where we ascended from the valley to the rock-strewn defile of Smaaget, we stayed to libel the scene in the camera, while our students of theology and law tramped on over the tumbled mass of lichen-covered boulder. Far away to the west the blue heights of the Horunger shot up into the sky from an ice-covered plateau, alternate sweeps of sunshine and shadow glinting across the glaciers between the group of peaks. Suddenly Skattebo sprang to his feet. One of the Norwegians appeared in the defile waving his hat, and shouted the magic word "Rens!"—"reindeer!" Gudbrand, ardent hunter, dropped everything and ran. So did we. But by the time we arrived, all

out of breath, the deer the hound had started were out of sight—not the first time we had missed seeing the shy animals, which, as some people imagine, swarm over "The Land of the Midnight Sun." So, while we scramble down the Koldedal, through a desolation of glacier and débris towards the green shore of Tyin, let me relate how, a few days before, we stalked reindeer on the Suletind.

There are on the Fillefjeld two mountain stations exempted from taxation, and subsidised by Government, as refuges for belated travellers in winter. About three hours' tramp to the south of Nystuen, one of these hospices, was an encampment of Finns, who tended a herd of reindeer on the slopes of the Suletind. Had we asked for a guide an hour sooner than we did, we could have accompanied one of the Finns, who had, unknown to us, spent the night at Nystuen, and set off on his return to the camp while we were at breakfast. It was our usual luck. We couldn't even get a small boy, so we went forth alone to beard the savage, untamed reindeer on his native heath, armed with an umbrella (Jones's), the camera, and a carpet-bag—not the least important item. A woman who had been in America gave us a parting direction as she stood, one hand shading her eyes, the other pointing out towards the sky in the direction of the Suletind. "Go right away over thar till you come to a shanty by a lake. You can't miss it." But we achieved the impossible. After about three hours of mounting a discouragingly endless series of mountain ridges, tramping through bogs, and wading deep, icy streams, we came to a long, narrow, dreary lake, and sat down on the reindeer moss to explore the carpet-bag. Mutton sandwiches, rye-bread, hard-boiled eggs, and a bottle of claret. Before us, across the water, the Suletind modestly hid its peak in clouds—but no reindeer.

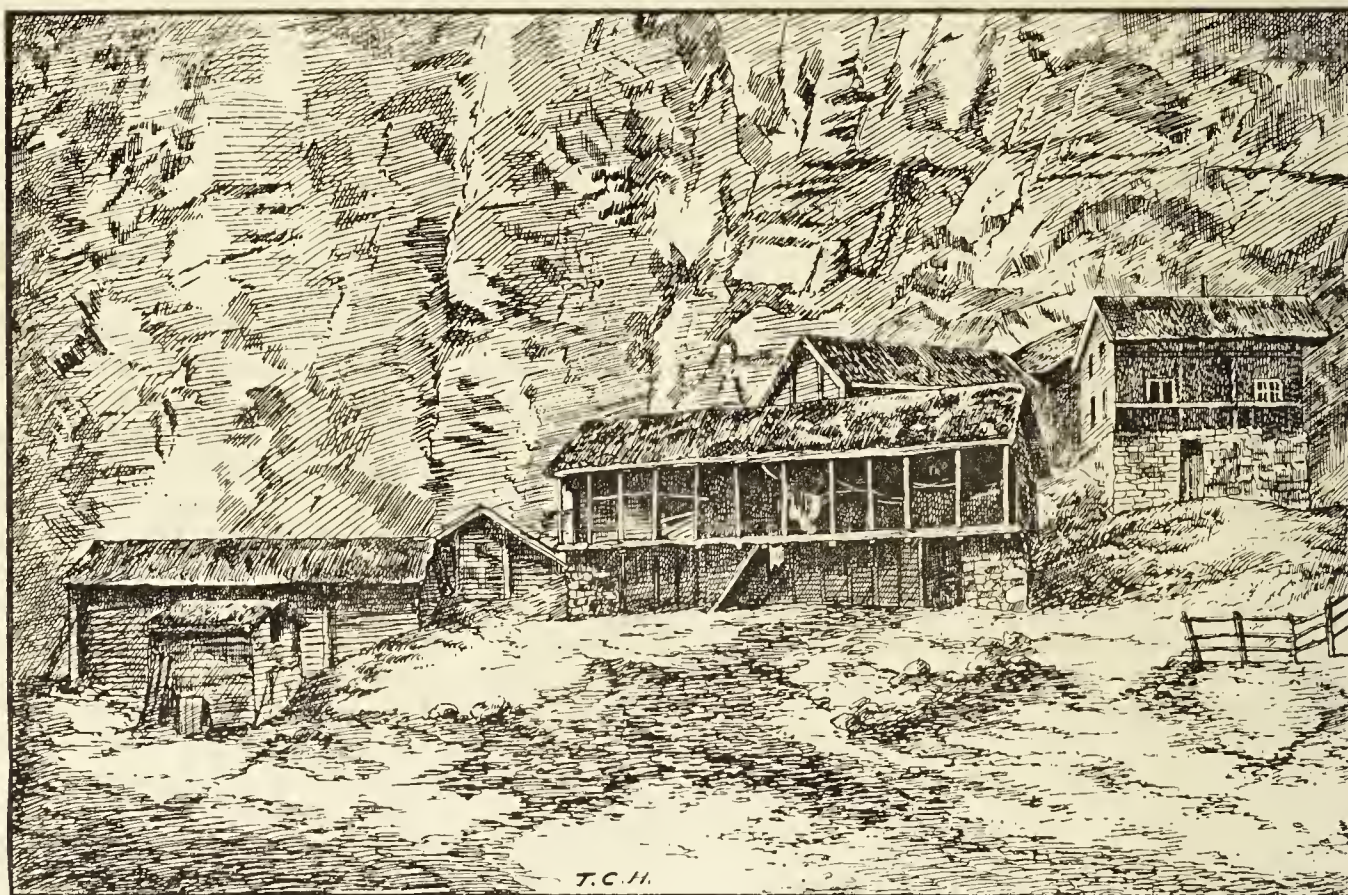
We set off again along the side of the lake, continually deceived by large boulders, which we mistook for the "shanty," till, about three o'clock, Jones cried out, "Look! There they are across the water; and there's a man milking them"—blissfully ignorant of the fact that it takes *three* men to milk the average reindeer. So we made a circuit of two miles round the end of the lake, and came within a short distance of the "reindeer," when Brown mildly remarked, "I'm not good at natural history, but *those* look uncommonly like *sheep*!" Then harmony between us was at an end, and we had to separate. We wended our weary way home, as the books say, the carpet-bag empty, ourselves disconsolate and ravenously hungry. The Americanised woman ran out to meet us, and, with a good-natured laugh at our mournful tale, said: "I guess the shanty's on the other side of Suletind"; but, observing the look of joy that began to dawn on our faces, hastened



to add: "I thought you were lost. 'Aftens' (the evening meal) ——"; but here she paused, and we made a horrible discovery. A caravan of nine ladies had arrived, and were *eating our supper*. Our joy can only be imagined. We expostulate. "Ah!" she says, flinging the door open, "they were so tired and hungry!" Nine hungry mortals crowded round the table, eating for dear life—eating our supper! We could not look on this and be calm, so we adjourned to the steps outside, where we could the better effervesce.

Skirting the shore of Lake Tyin, and crossing the rough tract of marshy ground which separates Tyin from Lake Bygdin, we reached Eidsbugarden

way of impressing Skattebo, had with solemnity unbuckled his long "tolle kniv" from his side and laid it in its sheath on the table, and then gone on to orate over the delinquent in German, and waxed so eloquent that Jones and I did not even think of using the scathing "Torsk"—cod-fish—an epithet calculated to rouse the most impassive native from the lowest depth of apathy to as much of a demonstration of anger as Norwegian nature is capable of. When Brown at last paused for breath, Skattebo crept away and returned with the half empty beef tin and wine bottle from our meal on the fjeld, set them on a bench, and left the room at once; and Jones



Vetti.

at sunset, comfortably tired after ten and a half hours' tramp. Curious to note the one accord with which our eyes all sought a certain shelf in a corner of the hut, where a flask of champagne lay snug behind a goodly array of bottled beer; touching the comprehensive "Ah!" we all fetched to find it still where we had laid it, the last of the stock, unconsumed by thirsty Jotunologists; pleasing the memory of how we hobnobbed over it at "aftens," and voted Skattebo a sad and hopeless scamp. Skattebo had not only done his best to make us spend the night at his hut, Tvindehoug, but on our arrival at Eidsbugarden had overcharged his bargain, and there had been an exciting and polyglot row, in which Brown, by

suddenly awoke to the affection he had always had for that beef tin and empty bottle, and gloatingly placed them on the shelf over the door, where they would catch his eye first thing in the morning.

A few words now more particularly about this "Home of the Giants." The best time for Jotunheim, from a pedestrian and from a photographic point of view, is in July and August. During the latter end of June the snow is in bad condition; at the beginning of September winter snow-storms begin. Our average daily expenditure for a fortnight, including wine, guides, and packhorses, came to about *six and six* each, and this was above what need be, as we plunged into



Jotunheim with all our belongings, thus necessitating pack-horses when moving from hut to hut. You can own property in the way of guides—most of them worse than useless when any difficult climbing must be done—at the rate of four and six a day. The photographic kit need not be very small, if you dare trust to the rough but willing natives; but anything Brobdingnag would be hampering; a guide, too, is not bound to carry more than twenty-two pounds.

Are you in want of pure, intoxicating mountain air that will give the veriest dyspeptic a ravenous appetite and a digestion of iron, are you willing to lead a rough, unconventional out-door life right in the heart of the grandest and most impressive of Norwegian fjeld scenery, then hie away "to Norrøyg over the faem," and pitch your tent in Jotunheim.

## ON THE EXERCISE OF TASTE IN PHOTOGRAPHIC PRINTING.

BY VALENTINE BLANCHARD.



It is an old saying amongst photographers that some negatives will print themselves; and it is undoubtedly true that, when the right exposure has been given, and, in consequence, the balance of light and shade is agreeable to the eye; and, in addition to this, the right amount of density has been given in development, the printer is not seriously tasked in producing satisfactory proofs from his negatives.

In a former chapter I pointed out a method for giving force to delicate negatives wanting in contrast. A great deal, however, may be done in the printing, particularly if the negative should happen to be a quick-printing one as well. Let the printing-frame be covered with a piece of ground or even opal glass, if there be extreme transparency in the negative, and expose to the comparatively feeble light of a dark corner, and then compare the print thus made with one produced without any precautions, and the contrast cannot fail to strike the most unobservant eye.

It will naturally suggest itself that an opposite course must be adopted with a dense negative, and too strong in contrasts of light and shade. If the negative be free from scratches on the wrong side, then it will be best to put it in a frame of its own size, without a glass, and expose in direct sunlight. In extreme cases, where even this plan is not sufficient to produce the result desired, the paper must be exposed for a few seconds to light until slightly tinted, and this must be done before

putting it upon the negative, and not afterwards, as some have recommended.

It is quite possible to stipple a semi-transparent colour, such as prussian blue or indigo, on the wrong side of the negative where the shadows are too transparent. This is best done with the finger while the colour is wet, and, if too dense, or not even enough after the colour is dry, a second application of the finger, after well breathing on the plate, will, if dexterously performed, produce the desired result. In printing from such a negative, however, it will be necessary to cover the printing-frame with ground glass when exposing it to bright sunlight, for, otherwise, all the marks of the paint would be crudely produced on the print. Of course, the methods here suggested are only to be employed to supply that *something* which is wanting in order to produce an artistic result.

It will not be out of place here to describe a method of subduing unruly high lights adopted by the late O. G. Rejlander, and which he used with marvellous skill in some of his pictures. He called it his *sun pencil*, and this was his method of using it. To put it in his quaint language:—"First catch a sunbeam, and then take care the point is fine enough for your purpose." A dark blind was pulled down over a window facing the sun, and then a small hole sufficient to let through a fine stream of sunlight was made in it. The print was removed from the frame, and held opposite the sunbeam, which was allowed to play upon the obtrusive patch of high light until sufficiently subdued to please the eye. It was by this means that Rejlander softened down the joins in his celebrated composite picture, "The Two Ways of Life."

The great point to bear in mind in employing this or any other method for subduing refractory patches of light is not to go too far. "The greatest art is needed to conceal art," is a well-worn axiom amongst painters, and will apply equally well to the photographic amateur.

While on the question of subduing obtrusive portions of a picture, vignetting may appropriately come in here. Its importance in portraiture is so well recognised that it scarcely needs discussion. My object, therefore, is to deal with it more particularly as applied to landscape productions. Every photographer knows only too well the difficulty of securing a picture so perfectly satisfactory to the eye as to need no alteration. To the painter only is given the power to remove rocks and trees from their appointed places and dispose of them exactly as he wishes. The photographer can only sigh and groan out, "If I could only just move that tree only ever so little, what a lovely landscape I should have"; or, again, "It it were not for that confounded lump of ugly rock,



which will come in the very centre of the picture—and I can't take the view from any other point—my landscape would be simply perfect." But, alas! thus ever is it for the unfortunate photographer, and he must simply make the best of it.

Now, the employment of a vignetting arrangement will enable the amateur frequently to select the best portion of a picture and blot out all the objectionable or disturbing portions. For instance, how often it happens that a most interesting architectural bit—an old ruin, for example—is spoiled by a monotonous foreground of turnips most symmetrically arranged in parallel rows, or an unbroken expanse of grass totally destitute of relief. By the judicious employment of the vignette, the foreground is broken up, and the eye led at once to the more important part of the picture.

I have before me, as I write, one of the most perfect vignetted landscapes I have ever seen. It is by Mr. H. B. Berkeley, and is a view of a noisy, shallow stream, impeded by boulders strewn here and there. Soft undulations of wood occupy the middle distance, and mountains back up the whole. To the right and left, in the immediate foreground, are two trees—one a silver birch—but too equal in size for good composition, had the whole of the picture been retained; but with extremely fine artistic feeling, a portion of the left-hand tree has been vignetted away, and that which has been retained droops over into the picture, and carries the eye well into the extreme distance. Considerably less of the right-hand tree has been permitted to remain, and the result of the whole is a most artistic production, very suggestive of the vignettes of Turner and Creswick, which are, by the way, well worthy the attention of the amateur as examples of what to aim at in this class of work.

Now, in vignetting landscapes, regularity is to be avoided, and it will be well, therefore, to determine beforehand what shall come into the picture and what best to exclude. Cover the back of the negative with *papier mineral*, and place the negative against a window or on a retouching desk, and with a crayon stump and powdered black-lead mark where the vignetting shall begin, and, of course, soften the extreme edge into the white paper. On the other side of the band of black lead, powdered Venetian red may be rubbed in and blended with the lead tint. In addition to this, of course, employ a piece of cardboard some distance away from the outside of the glass of the frame, and with the opening sufficiently large to take up the vignetting where the edge of the black-lead band softens into the red tint. By the adoption of this plan the exact form of the vignette can be determined with certainty, and a much more artistic result will become possible.

## THE OPTICAL LANTERN.—IV.

BY THE EDITOR.



HERE are now various lanterns obtainable which burn paraffin-oil, and which, in point of radiance, entirely beat the more old-fashioned kinds of lanterns burning colza and the heavy lamp-oils out of the field.

Indeed, such lanterns, with their primitive single lenses, and with bull's-eye condensers of the policeman's lantern form, are now only found in the toy-shops. The modern optical lantern, with its three or four wicks, its brilliantly burning oil, and its capital lenses, has had as much to do with raising the instrument from a toy to a scientific instrument of great value as photography has had in the perfection it has brought to the art of slide-making.

But we must not be misled as to the capabilities of the oil lantern. It is undoubtedly the most convenient form in use; but, in spite of all the wonderful ingenuity which has been expended in its construction, it is very limited in its application. No form of oil lantern with which I am acquainted will give a really well-illuminated disc of more than three or four feet in diameter. Advertisers may talk of brilliantly-illuminated pictures nine and even twelve feet in diameter; but I fear that, in making these statements, they draw very largely upon their imagination. The oil lantern is a vast improvement upon its predecessors, and is a capital means of exhibiting in a sitting-room a few photographs to a dozen friends; but for the smallest of public halls it is all but useless. For such a purpose the limelight must be used; and, owing to recent modifications, this is a thing which can be done without any great difficulty, and certainly without danger, if only proper and reasonable precautions be taken. But there are some worthy people who will infallibly make a muddle of anything which they undertake, and will have a blow-up if a blow-up be within the bounds of possibility.

The limelight for lantern purposes is used in four different forms, and to these severally I will now call the reader's attention. They are known by the following names:—

1. The Oxycalcium light.
2. The Blow-through, or safety jet system.
3. The Ethoxo light.
4. The Mixed Jet system.

All these methods are the same in principle, but the amount of light afforded by each is very different, if we except the two last-named, where the light given is the brightest obtainable, and which are about equal in value. In each a cylinder of lime is rendered white-hot by the action of a blow-pipe flame consisting of the two gases,



hydrogen and oxygen, more or less blended together.

The oxycalcium jet consists of a spirit-lamp which is fed from a little reservoir at the back of the lantern. The spirit furnishes the necessary hydrogen, and through its flame a jet of oxygen is passed, and impinges upon a cylinder of lime placed just at the other side of the wick. This lamp is the simplest of all forms of limelight, and will well illuminate a disc of about ten feet in diameter with a clear white light. It has advantages in the matter of simplicity, but presents one disadvantage in the circumstance that the lantern must be kept perfectly level. If it is inclined backwards, the spirit cannot flow to the point of combustion, and if it is inclined forwards the fluid may flow too rapidly towards the wick.

The next form of limelight, in which the blow-through or safety jet is used, is far more powerful. If the jet be a properly-constructed one, it will well illuminate a picture fifteen feet in diameter. In this jet the hydrogen is supplied from the nearest household source, by a connecting tube of indiarubber. Herein lies, perhaps, its only disadvantage. In an ordinary house the connection is an easy matter, but in large halls, which are now commonly lighted by one or two sunlights high overhead, the operator finds himself in a serious difficulty. In this jet the two gases do not mix until they reach the point of combustion, and for this reason the apparatus is distinguished by the word "safety." For hydrogen and oxygen, when mixed together, form an explosive vapour of most terrible power, and one which is most difficult to control. If any one should wish to prove this, let him fill a soda-water bottle with the gases over a pneumatic trough in the proportions of two volumes of hydrogen to one of oxygen. Then close the bottle with a well-greased cork, and, after wrapping it in a towel in case of fracture, take out the cork, and put the mouth of the bottle in front of a candle flame. The report caused by the explosion of the gases will be quite equal to a heavily-charged fowling-piece. But when the two gases are used in conjunction with the safety-jet there is no risk of explosion, for no mixture takes place until the gases meet on the lime cylinder. I know that accidents have happened when this jet has been in use, but they are traceable to improper use of the apparatus. A case of this kind came under my notice quite lately. An optician had employed a new hand to see after the making of the oxygen gas and filling the bag with the same. This individual was, after a time, left to his own devices, and finding, upon one occasion, that the bag was not full, he attached it to the nearest gas-bracket until it was properly distended. This bag was used in public the same evening, and a few minutes after the proceedings

commenced it blew up, and, besides wrecking the lantern, smashed all the windows in the hall. The cause of the disaster leaked out afterwards.

The two other systems named, although they give, as already stated, the best results of all, I do not recommend, except for the use of those who may be called professional showmen. The ethoxo light depends upon the vapour of ether for its hydrogen, which is mixed with the oxygen before the point of combustion is reached. In the mixed jet system, the two gases are kept in separate gas-holders, and, as the name implies, they mix before reaching the lime cylinder.

Oxygen gas is now supplied commercially, compressed in iron and steel bottles at so much per foot. This is a great boon to the amateur worker; and it is not too much to say that it has made the use of the limelight possible to him. By using the gas in this form, he dispenses with all the trouble, mess, and danger involved in making the gas for himself; he is saved the expense of perishable and bulky bags, and the preparations for an exhibition are reduced from hours to minutes.

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## THE HUMAN EYE CONSIDERED AS A PHOTOGRAPHIC CAMERA,

WITH ESPECIAL REFERENCE TO THE RETINA.

BY DR. G. LINDSAY JOHNSON.

(*A Paper read before the Camera Club. Continued from page 201.*)



NOW, all photographic lenses are provided with a set of diaphragms, or stops, which, in the case of a single lens, are usually placed in front, and in a combination between the lenses. In the eye we have also a diaphragm placed in front of the lens which is known as the iris, and which is automatically adjustable. You may recollect, I said just now that the nearer the object is to the lens the greater is the spherical aberration. You also remember that one of the ways to correct spherical aberration is to stop down the lens. Now, when we accommodate our eyes to see a near object, the iris contracts over the lens, so that it is practically stopped down, and this quite unconsciously and without effort on our part, so that the difficulty of spherical aberration is thus largely overcome.

In the camera, when we wish to focus for an object close at hand, we are obliged to lengthen out the camera, for, as you all well know, where an object comes within about 100 times the focal length of the lens, the rays will no longer meet on the focussing-screen, but a little behind it, and so you have to begin racking out to get the image



sharp. Now, the eye, being encapsuled in an unresisting tunic, cannot be lengthened, so the difficulty must be got over in another way. The lens, as you remember, is highly elastic, and around its margin is a circular band of muscular fibres. When these fibres contract, they release the tension of the capsule which keeps the front of the lens more or less flat when the eye is at rest, or looking at a distant object, so that the pressure being relieved, the lens bulges forward, and increases in curvature. Now, if you increase the curves of the lens you necessarily shorten the focus—in other words, you bring the image nearer to the lens until it falls on the retina, and this the eye can do (quite unconsciously on your part) until the object gets within three or four inches from the eye. At this point the lens has expanded to its full, and no effort on your

latter being the largest working aperture of any lens yet made. When the eye is fully stopped down by putting a few drops of eserine solution into the eye, the ratio becomes about  $f/16$ .

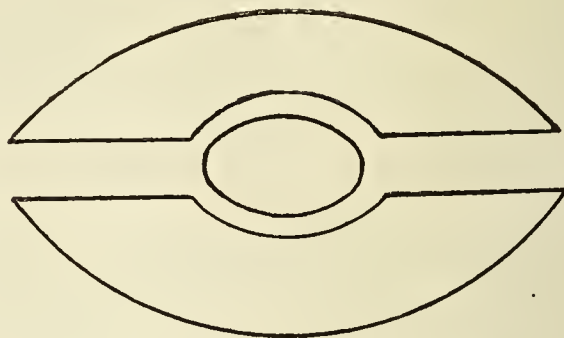
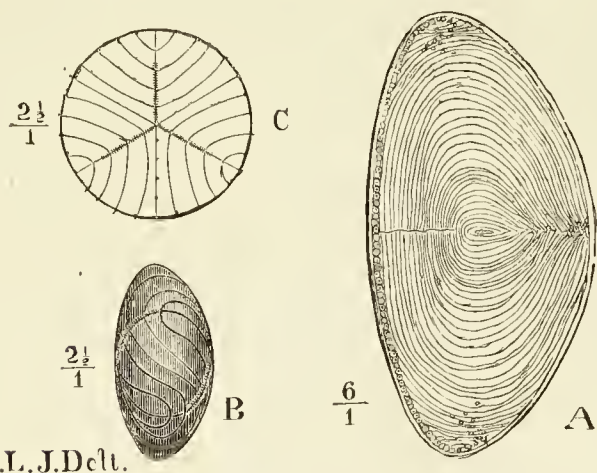


Fig. 4.—Diagrammatic section, showing the back and front of the Lens and its dense nucleus.

Another point of resemblance between the human lens and the portrait combination, is that it possesses exquisite definition over a very small area. This, as you know, is the peculiar property of the portrait lens.

The average area of distinct definition in the human eye is surprisingly small. Repeated experiments with this instrument, which I have brought to show you, and which is called a perimeter, shows the average angle not to exceed five degrees. Outside that everything is blurred. This angle varies in different people and in different states of health, and we make use of this fact in diagnosing certain diseases of the eye.

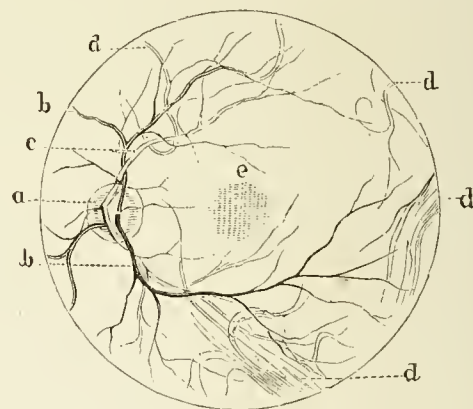


G.L.J.Delt.

Fig. 3.—A, Lens of human eye enlarged six diameters; B and C show Secondary Curves (not described in this paper).

part can bring the image into focus; but see how beautifully the mechanism works: look away from this object to the view out of doors, and immediately, and without giving it a thought, the distant object you look at is in perfect focus.

Of all kinds of photographic lenses the portrait combination is the form which most agrees with the human lens in its properties. In the first place it is aplanatic. With a large stop, such as the iris affords, all objects in the same plane are in focus. The focal length of the lens in the eye is a little over half an inch,\* while the average diameter of the pupil is about  $4\frac{\text{mm}}{32}$  ( $\frac{5}{32}$  in.)—*i.e.*, between  $f/3$  and  $f/4$ . When working with the full aperture, which can be obtained by dropping into the eye a solution of atropin and cocaine, the rapidity corresponds to rather less than  $f/2$ , the



G.L.J.Delt

Fig. 5.—View of the back of the eye, as seen with the ophthalmoscope. *a*, disc of optic nerve; *b*, retinal artery; *c*, retinal vein; *d*, choroidal vessels showing through; *e*, area of distinct vision round the yellow spot, situated in the centre of the round patch, but not specially indicated.

Now, if we turn to the back of the eye and examine the surface which receives the picture (*i.e.* the retina), we shall notice close to the outer side of the disc or blind white spot, where the nerve enters, a slight pinkish depression, termed the yellow spot. This depression lies in the axis of the eye, and is the spot which receives all the accurately-defined part of the image, which we

\* I wish it to be particularly understood that this estimation is not the actual focal length of the human lens considered as a photographic lens should be, that is, in air, but taken in conjunction with the other refractive media of the eye. If the focus of the lens be taken when removed from the body, it will be found to be  $50.617\text{mm}$ , *i.e.*, two inches as nearly as possible.



spoke of as lying within the area of 4 deg. or 5 deg. This yellow spot is almost confined to man. None of the domestic animals are furnished with it. It occurs in the chamelion and certain reptiles, where very acute vision over a small area is necessary, and also in one or two of the higher apes.

(To be continued.)

## PHOTOGRAPHING BABIES.

BY ADA S. BALLIN.



HAT can be prettier than a well-taken photograph of a pretty little child? No triumph of photography is so attractive; but, alas! its charm is only equalled by its rarity.

According to the *New York Tribune*, an artist advertised for pretty babies to be brought to his photographic studio, and on the appointed day a long procession of mothers and nurses appeared, each naturally convinced that the infant in her charge was quite unrivalled for beauty; but the advertiser was apparently of a very fastidious turn, and not one of the children pleased his taste. To a friend who asked him what he required in his ideal baby, he replied, "I was looking to find a pair of eyes large and wide apart, a short upper lip, regular nose and ears, and an oval chin. I was disappointed. Will have to try again." It is not very likely, however, that any further trial was more successful than the first in summoning so improbable a pink of perfection as that desired by the gentleman in question, and he would have acted more wisely in making the best of the material provided for him by nature than in continuing to sigh after the unattainable.

In point of fact, regular features are almost unknown in young children, yet the majority of little ones between the ages of one and five years are decidedly pretty, and it is the fault, not of nature, but of the artist, if he fail to reproduce them successfully.

To thoroughly succeed with children, a photographer must really love them, and be accustomed to their little ways and tricks; he needs, moreover, a considerable fund of patience in order to be able to do his subjects justice, as well as ready tact to seize the right moment to "take them," for, with such restless and changeable beings, opportunities come and go with the greatest rapidity, and a chance let slip is often gone for ever.

Children, even infants of three or four months old, are very apt to take strong likings and dislikings to strangers with whom they may be brought in contact, and woe to the operator whose little subject looks upon him with disfavour, for no amount of coaxing will call "a pleasant expression" to the tiny features as long as he is in view.

Favour is, however, always shown to the true lover of children, and then the case becomes simplified, and the little one has only to be amused and kept in good temper until the operation is over.

It has been suggested by a respectable contemporary that there is "no better way" of keeping babies quiet for photographic purposes "than by dipping their hands in treacle and putting feathers on the treacle. The delight afforded by transferring the feathers from the right hand to the left, and back again, varied by an occasional taste, is said to subdue the most obstreperous infant." But, successful as this may be, I nevertheless do *not* think it well to recommend the plan, as it seems not likely to improve the artistic effect of the picture, or the temper of the mother or nurse, however soothing to the child itself. There are less drastic methods that may be adopted with advantage.

A brightly-coloured picture-book, a doll, a box of wooden soldiers, and a musical-box should be considered as part of the necessary furniture of every studio. The musical-box is most useful in rivetting the attention of very young infants, who will frequently remain perfectly still for three or four minutes to listen to it. It should not be set playing until the operator is quite ready to begin.

Rather older children may generally be kept quite motionless for a time by the sight of some moving object to which they are unaccustomed. They watch the motion intently until they have come to some conclusion about it, after which they try to approach and touch the object. A toy worked by steam, a gold fish swimming in a bowl, a squirrel in its revolving cage, or even a bright ribbon or piece of paper made to revolve or flutter, are all effective in these cases. A cat or other tame animal is a most useful ally, and I would suggest that very great advantage might be derived from training a cat or dog to be photographed with one's little clients, to whose presence it must, of course, be accustomed.

By amusing children on such lines as I have just sketched, natural and graceful poses and genial, childlike expressions are obtained, advantages which it is impossible to gain in any other way. No one can pose a child as well as it will pose itself, if left alone. Who has not seen a photograph of some wretched little boy, stood rigidly upright and straight, looking as if awaiting the stroke of the schoolmaster's rod; of some little girl standing with one arm propped on the seat of a chair, the other arm hanging at her side with a basket of very artificial-looking flowers depending from her hand, her mouth drawn down, and her eyebrows drawn up and together by the "grief muscles," her whole figure forlorn in the extreme; of some baby perched on a hassock on



top of a table, looking as if it were going to be strangled, with round and staring eyes, and a general expression as of incipient howl, the strained and unnatural position having evidently been maintained by the nurse's clutching hold of the dress behind? Such is the ordinary run of children's photographs; but let us change all that. Suppose we give the boy a top, one of a sort that will not run down too quickly, and take him while he is watching it spin; suppose we give the girl a doll, and let her sit in a large arm-chair, and make believe she is nursing her mimic baby to sleep. Tell her not to move, lest she should wake it. Suppose we lay the year-old baby on a rug on the floor, and let it gaze with delight at the picture-book, or play with a toy rabbit or the cat, while we watch till we can seize a moment of stillness to "take" it. Then, I think, we shall have a result which will be worth any little extra trouble that we may have taken.

With young children, the instantaneous process should always, if possible, be employed, as, owing to their natural restlessness, the same position is rarely maintained for more than a few moments. It is worth while observing also that with ordinary processes it is better to take small pictures, and afterwards enlarge them, if necessary, since the larger pictures can only be produced by weaker instruments which require longer exposure.

In dull weather, too, when long exposures are necessary, children cannot be taken successfully, and it is best to resort to artificial light.

The round, soft, dimpled forms and faces of the little ones are too often disfigured by the hard lines of their dress and its general unsuitability and ugliness. Light colours are, as a rule, the most suitable; but the most unbecoming thing a child can wear is a white linen or cambric frock, starched and glazed by the laundress, with a blue sash tied round the waist and in a large bow at the back—a form of costume in great favour with those who bring their young charges to "have their portraits taken." A dirty dress clinging close to the figure is worth a hundred such. Old clothes, indeed, are best, more especially as the child is used to them and not afraid to damage them by playing about. There should be no white lines about the dress; if lace is put round the throat, it should be first dipped in tea or coffee. Anything shining in the dress, like satin, glaze, and starch, brings out dark shadows and detracts from the fairness of face. Similarly, before a child is brought to be photographed, the hair should be washed and well dried, so as to make it fluffy and remove the gloss caused by its natural grease.

The conscientious photographer will often have trouble with the dress of his small subjects, as mothers generally think it advisable to cram as much finery on to the poor children as possible.

He must resolutely decline to have the picture spoiled with a large and befeathered hat or a gorgeous pelisse. I have in my mind now the image of a three-year-old boy I saw in the park, dressed in a very large purple-velvet befeathered hat, with an elaborate pelisse of the same material, trimmed with wide and rich white lace, beneath the edge of which appeared a pair of skinny and shivering red legs, the extremities of which were encased in lace socks and fashionable boots. No costume could have been uglier, less healthy, or more expensive. The more simply a child is dressed, the better, both from a sanitary and photographic point of view.

Children, if they are at all good-looking, readily lend themselves to fanciful arrangements of dress and grouping. I have seen a charming picture of a tiny girl standing up in her night-dress, which is raised in both hands, so as to hold some toys in it, and which shows a sweet little pair of bare feet and ankles. I have a very striking photograph of a little relative of mine at the age of about nine months. The baby is naked but for a tiny shirt, and is held in the arms of a tall black man-nurse, clad in flowing robes, and standing drawn up to his full height. The effect is splendid. In another beautiful photograph I have seen a young mother has apparently been taken in the act of walking across a room with her little one perched on her shoulder. The child is about eighteen months old, and appears as if it were thoroughly enjoying its ride. Its attention has been arrested, so that the head is turned towards the shoulder, giving a full-face view. The mother, one of whose arms is raised to hold the child in its lofty position, while the other hand caresses its feet, is turning her head to see what the youngster is looking at; so that a good three-quarter view of her face is obtained. A curious but very pretty fancy effect was obtained by a lady who exhibited in the Amateur Photographic Exhibition, held last spring by the Stereoscopic Company. It was a large group of cherub heads floating among clouds. The effect was produced by posing the heads of half-a-dozen small boys through holes in a curtain. Beneath each head was a large pair of pheasant's wings. The clouds were afterwards arranged. An effect such as this cannot, of course, be recommended for general use; but there are so many pleasing possibilities of pose and arrangement that the artist of ingenuity and resource has practically an infinite variety to give to the subjects which pass into his hands, and the stereotyped positions and arrangements, according to the same rule of thumb, adopted in all cases, however essentially different among themselves, should be sent as quickly as possible to the goal "whence no traveller returneth."



## PYROGALLOL.

BY SPENCER B. NEWBURY.

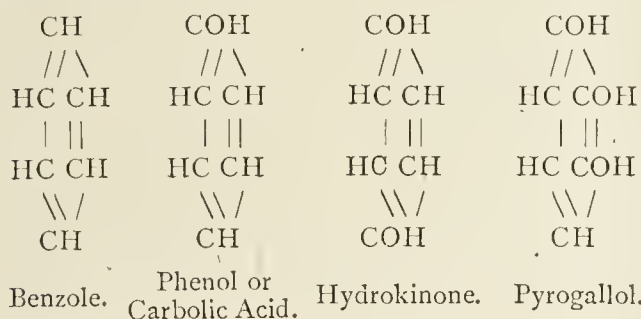
*Cornell University.*

[Read before the Society of Amateur Photographers of New York.]

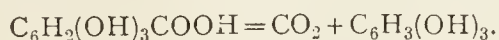


THOUGH pyrogallol, or pyrogallie acid, is one of the most familiar substances with which photographers have to deal, yet but little is generally known concerning its chemical nature. In view of the great usefulness of the substance, and the beautiful results which it can be made to yield, it may be that a brief sketch of the origin, mode of manufacture, and chemical properties of pyro will not prove uninteresting to this society of students of the science as well as the art of photography.

Pyrogallol is a derivative of Benzole, and is closely related to phenol, or carbolic acid, and also to hydrokinone. The relations in which these substances stand to each other is shown by their graphic formulas :



It will be seen from this diagram that phenol consists of benzole, in which one atom of hydrogen attached to a carbon atom is replaced by the group "hydroxyl," or OH; in hydrokinone two atoms of hydrogen, and in pyrogallol three atoms, are replaced in the same way. It is not, however, from benzole that pyrogallol can most conveniently be prepared. An abundant source of supply is found in nature in the gall-nuts, or rounded swellings produced by the sting of an insect on the twigs of the *Quercus infectoria*, a species of oak common in Syria and Asia Minor. These gall-nuts are collected and exported in great quantities from Smyrna and Aleppo to all parts of the world, principally for use in the manufacture of writing-ink. They contain a large percentage of tannic acid, or digallic acid, which on boiling with dilute acids splits up into two molecules of gallic acid. Finally, gallic acid, when gently heated, melts and gives off carbonic acid, forming pyrogallol, according to the equation—



Pyrogallol forms white crystalline leaflets and tufts; melts a little above the boiling-point of

water; and when heated is volatilized and deposited again in feathery masses in the cooler parts of the vessel. This operation is termed sublimation, and is a valuable method of purification of volatile solids, since in the passing into the state of vapour the impurities are left behind. Hence the purest pyrogallol is termed "re-sublimed."

Pyrogallol is not an acid, for the slightest addition of an alkali renders it distinctly alkaline. Rosing states that it does not decompose carbonates, and forms no salts with the alkalies. It is, therefore, evident that the common name, pyrogallie acid, gives a false idea of the nature of the substance, and that it is no affectation to say "pyrogallol," as all modern chemical writers do.

Pyrogallol—or "pyro," to use a convenient and well-established abbreviation—owes its efficiency as a developer to the great ease with which it may be oxidised and decomposed. In a dry state it remains unaltered in the air, but in solution in water it quickly absorbs oxygen, and is converted into carbonic acid, acetic acid, and brown products of decomposition. Reducing agents prevent this; sulphurous acid, for example, is a well-known preservative of pyro solutions.

Salts of gold, silver, and mercury are readily reduced to metal on the addition of pyro to their aqueous solutions. In the case of silver compounds, this action is greatly retarded by the presence of large quantities of acids, and on the other hand is rendered much more energetic if the pyro be made alkaline with caustic ammonia, potash, or soda, or the carbonates of these alkalies. In fact, alkaline pyro will reduce to metal not only the soluble salts of silver, but also the bromide, chloride, and iodide, which are not affected by acid pyro solutions. In the old wet collodion process, the development consisted in the reduction of the free nitrate of silver which was present in excess, and the deposition of the metallic silver which was present in excess, and the deposition of the metallic silver which resulted upon the parts of the film upon which the light had acted. For this purpose, if pyro was employed, it was necessary to use a highly acid solution, in order that the deposition of silver should take place gradually; neutral or alkaline pyro would give dense fog at once. In dry plates, however, there is no silver nitrate present, and the development consists in the direct reduction to metal of the bromide and iodide of silver composing the film. To affect this, the most powerful developing agents which chemistry can furnish—as, for example, alkaline pyro—may with safety be employed.

Of the various alkalies which have been suggested for use with pyro, ammonium hydrate and the carbonates of soda and potash are most often employed. Sodium sulphite is generally added to



the pyro solution to preserve it from decomposition, and to prevent the staining of the negatives which results from the action of oxidized pyro on the gelatine of the film. The preservative effect is also much aided by the addition of a little sulphuric acid to the solution of pyro and sulphite, thus causing the liberation of a small amount of sulphurous acid. Even with all these precautions, solutions of pyro are very liable to deterioration by absorption of oxygen from the air, giving stained negatives, and by far the best plan is, as is well known, to prepare the solutions only in small quantities, and to renew them frequently.

In the hands of the writer, the sulpho-pyropotash developer (suggested, I believe, by your President) has yielded results superior to those obtained by any other formula. There is an exquisite crispness and beauty about the pyro-potash negatives which seems to me to be lacking in those produced by the aid of either soda or ammonia.

Other substances resembling pyrogallol in chemical character, and, like pyro, belonging to the group of polyvalent phenols, are known to have strong reducing properties, and may be used as developers. One of these, hydrokinone, of which the formula is before you, is stated by Captain Abney to be more efficient than pyro, and to give results of equal beauty. Its high price has, however, been an obstacle to its general use. Two "isomers" of pyrogallol (that is, substances having the same composition, but differing in the arrangement of the atoms in the molecule), namely, phloroglucin and oxy-hydrokinone, are stated by Dr. Eder to be less powerful developers than pyrogallol. These differ from pyro only in the fact that the three hydrogen groups are attached to different carbon atoms in the closed chain. Another substance, tetraoxybenzine, which has four hydroxyl groups, and which may yield interesting results, appears not yet to have been tested photographically.

All these compounds act as developers by virtue of the readiness with which they absorb oxygen. It is probable that the developer acts indirectly upon the bromide and iodide of silver, by decomposing water with absorption of oxygen, setting hydrogen free, which in turn takes the bromide from the silver compound, forming hydrobromic acid, and leaving metallic silver. The influence of the alkali may be explained by the supposition that it neutralises this acid as fast as it is formed. In the action of the developer, however, there is much that is only very imperfectly understood, for we know nothing positive as yet as to the nature of the mysterious, invisible, latent image produced upon the plate by light, which gives the first impulse to the development and determines the chemical reactions which result in the visible picture. Until we know more of these things, we

may say that in many points chemists find themselves as much in darkness as other people when they enter the dark room.

## LANTERN TRANSPARENCIES BY THE WET COLLODION PROCESS.

BY W. GOODWIN.

(Continued from page 211.)



THE glass should be good, and as free from specks and flaws as possible. When new, it should be rubbed on both sides with weak hydrochloric acid, rinsed in water, and set up to dry. Then, the evening before it is wanted, it should be rubbed with tripoli and spirit of wine, or, better still, with a drop of old iodised collodion, then polished off with a clean cloth, and finally with a piece of clean chamois leather. The plate thus cleansed should be kept free from dust. The final polishing with leather should not be done immediately before using, or the glass, being electrified, will not hold the film, and you may see a choice slide or two disappear down the sink.

The collodion may be ordinary iodised negative, but it is better to add to each ounce, a day or so before beginning to use it, two grains of cadmium bromide. This causes it to give a film more sensitive to faint light, and thus secures more delicacy and detail in the lights of the slide. It should not be newly iodised, but is best when about three months old. The date of iodising may be found on the bottle when buying it.

I now pour some of this collodion on to a plate, and by tilting the glass cause it to flow over the whole surface; then, while pouring off the surplus, rock the plate about to ensure even setting, free from lines. The surplus collodion should be poured into a small funnel having a plug of cotton wool in its neck, and allowed to filter through into a second bottle, thus getting rid of any dust which it may have washed off the plate. When set, I place it on the dipper, and lower it steadily, without stoppage and without hurry, into the silver bath, where we will leave it while we turn our attention to the other chemicals. When the collodion contains a considerable proportion of bromide, as I have recommended, the plate should remain not less than two minutes in the bath, because no bromide of silver will be formed till the iodide is saturated. My own practice is to leave the plate in the bath while I expose and develop the previous one, and it does not seem to suffer by such long immersion.

My dipping-bath consists of a No. 7 flat battery-cell, thoroughly saturated, while hot, with paraffin, and it serves the purpose admirably. The dipper



is a strip of glass one inch broad, having a narrow strip cemented across the bottom, with marine glue to support the plate.

The silver solution, or "bath," as it is called, is the only thing that may prove troublesome. It consists of a thirty-grain solution of silver nitrate, and a little care in making this up may save many failures. The silver nitrate is dissolved in about one-fourth of the water, and to this is added a grain of potassium iodide dissolved in a few drops of water. The reason for this is that the silver solution dissolves a small amount of silver iodide, and would therefore attack the first plates sensitised. The rest of the water is then added, when some of the silver iodide will be precipitated, leaving the solution fully saturated. A solution of sodium carbonate should now be added till a precipitate of silver carbonate begins to form, and the bath, being thus neutralised, should be exposed to daylight—or, better still, sunlight—for a day or two. Organic impurities in the water will thus be thrown down as a brown precipitate, leaving the silver solution pure. Sufficient solution should be prepared to fill the dipping-bath at least twice over, and, after "sunning," half the quantity should be decanted, or filtered off, and acidified with dilute nitric acid till it just reddens litmus paper after thirty seconds' immersion, and it is now ready for use.

After a time symptoms of fog will be found in the plates, and this is a warning to change the bath. The second half of the original solution is now to be acidified and taken into use, while the first half is poured into the bottle, neutralised, and placed in sunlight till required, at the same time adding, say, fifteen grains of silver nitrate to replace that taken up by the plates.

By-and-by a new trouble will arise. A yellow deposit will be found on the dipper, and the plates, after fixing, will be full of minute pin-holes. This denotes that the bath is over-saturated with iodide of silver. By this time, however, the quantity will have been reduced by use, and if water be added to make up the original bulk, the iodide will be thrown down as a precipitate, which should be filtered out, and then silver nitrate added to make up the original strength. If the bath absorbs so much alcohol and ether from the collodion that the developer will not flow easily, it should be exposed in a flat tray, instead of the glass bottle, when the spirit will evaporate.

These operations doubtless sound very elaborate; but it must be remembered that they are only necessary at considerable intervals, and that a large number of slides may be made before the bath needs any attention. Every precaution must, of course, be taken to keep unnecessary impurities out of the bath—especially hypo and developer.

The plate which I placed in the bath will now

be fully sensitised, and I remove it and rear it up on clean blotting-paper to drain, while I coat and immerse another. Now I take the drained plate, and, after wiping the back with a piece of blotting-paper, place it in the dark slide.

I need hardly say that we are supposed to be in the dark-room, though I am working by gaslight just now, so that you may all see what I am about.

I now put the slide in place in the camera, and draw the shutter, and then proceed to burn about eighteen inches of magnesium ribbon behind the negative, which is covered with ground-glass. The ribbon is moved about to ensure even illumination. The slide now being closed, we are ready to think about development.

The developer is a solution of iron protosulphate (ferrous sulphate) acidified with acetic acid. The iron should be clean, and of the characteristic pale green colour; if rusty, it should be washed till clean, and the crystals dried on blotting-paper.

A good average developer consists of—

Ferrous sulphate .....	30 grains.
Glacial acetic acid .....	20 minims.
Water .....	1 ounce.

I add a little sugar, gelatine, &c., to secure a warm tone; but this necessitates a longer exposure, as it gives a tendency to hardness. If nothing of this kind is added, then a little alcohol is necessary to make the developer flow easily.

By varying the strength of the developer, equally good results may be got from thin or dense negatives, and this is one of the merits of the wet-plate process.

I now take the exposed plate on a pneumatic holder, and measuring out just sufficient developer to cover the plate, I pour it quickly on, causing it to work round and round to insure even development. Care should be taken not to allow any developer to fall off the plate, as it would carry with it some of the silver necessary to form the image; should the contrasts in the negative be *very* strong, however, a little silver may be allowed to wash off.

Development is rapid, and as soon as sufficient density is obtained, I wash off the developer under a stream of water, and fix in hypo. When fixed, a few minutes' washing under the tap will suffice, and the slide may be dried and varnished with filtered varnish.

Full density should be obtained if possible by development; but if intensification is necessary, a drachm of developer and a drachm of fifteen-grain solution of gelatine are mixed, and a few drops of the silver bath added. This is flowed over the plate till density is attained. Intensify before fixing if the slide is under-exposed, and after fixing if fully or over exposed. The gelatine prevents injury to the tone.



## Reviews.

*Photographic Mosaics.* An Annual Record of Photographic Progress. Edited and published by Dr. EDWARD L. WILSON. (New York.)



HIS is the twenty-third year's issue of this very useful and entertaining volume. As it must be new to many readers on this side of the Atlantic, its title may seem somewhat strange and inexplicable. But let us quote a few words from the introductory article by Dr. Wilson, who, by the way, is the Editor of the *Philadelphia Photographer*, and the matter will be made clear:—"If you will visit the old ruined baths of Caracalla, in Rome, or some room among the ruins of ancient Pompeii, you will there see some beggar of an Italian repairing a mosaic pavement, or wall, or design. He first lays a bed of cement, then he places the various coloured and curiously-shaped bits of marble and stone in place, agreeably to the design or pattern. Lastly, he polishes the outer surface with a heavy marble slab attached to a mop-handle, applying it much as Bridget does the mop, only with much less energy. Thus he brings out the colours and the polish, and keeps the bright and beautiful side *on the top*. Such being the habit of the true Italian Mosaicist, I shall follow him by hiding the roughness and dulness, and present to you the bright side only." This is the key to the book. It contains articles by different workers in photography, each being of different pattern and colour, but all contributing to an harmonious whole. The pleasure of reading the work is enhanced by good printing and good paper.

## Apparatus.

A NEW BACKGROUND.—We have recently had an opportunity of testing the graduated background for portraiture which has been introduced by Oscar Schölzic, of 9, New Broad-street, E.C. This simple, ingenious, and, moreover, cheap contrivance should be a boon to amateur photographers who are not provided with a glass room, and the other usual facilities for portraiture. The background, as sent out by the maker, consists of six pieces of wood which can be quickly put together into a frame; upon which is then placed the background proper, which is oleo-lithographed upon strong paper. The tint of the background is so graduated that it is possible by altering its position to adjust its lights and shades to any subject. So that a face in shadow can be relieved by a light portion of the background, while a darker portion can be brought behind the well lighted side of the sitter. The size of the frame is 40 by 48 inches, so that it is available for half-length portraits. The inventor claims for this background the following advantages:—1. Artistic effect in bust portraits. 2. Saving of time and expense in the lighting arrangements of the studio. 3. Can be used with advantage in the open-air. 4. Greater durability than painted backgrounds. 5. Great cheapness.

## Answers to Correspondents.

[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]

C. M. P., Christchurch, New Zealand.—You are quite correct theoretically, but rather at sea in your practice. A negative, and not a positive, must be the basis of operations. We know of no book upon the subject; but a number of articles have appeared from time to time in the journals—the *Photographic News* especially. We may, perhaps, publish an article on the subject; but not just yet.

D. M.—1. The following is the nearest that we can find to the one which you describe. Make up a stock solution thus:—Sodic sulphite (pure), 8 ounces; boiling water, 16 ounces. When dissolved, add Pyro, 1 ounce, and washing soda, 4 ounces. For use, dilute with four parts of water. No acid is required. 2. From your description we should imagine that you had been over-exposing your plate. Why not try the Washing Soda Developer, upon which an article appeared in our columns some months back?

I. J. K.—In our next issue will appear an article (illustrated) which will point out very clearly the course to be pursued.

CAPTIOUS.—The book you refer to is certainly rather antiquated; but we happen to know that it is now under revision, and will be before the public in a very short time.

MANCHESTER.—Why not communicate with the Hon. Secretary of the Amateur Society in your own city? Here is his address: F. W. Parrott, Esq., 53, Chapel-street, Salford.

DODGER.—Pumice powder is too coarse a medium to use, and you will run great risk of spoiling the film. Try ordinary ink-eraser, and if the part of the negative to be reduced is only small, and you are fearful of injuring its surroundings, cut a hole corresponding in shape and size to it in a piece of writing-paper, and work with that as a protection.

HYPO.—We believe that the patent has now expired, and that anyone is at liberty to use the process. Inquire at the Patent Office.

BEGINNER.—The pinholes are, most probably, caused by dust. Carefully clean your double backs, and dust your plates with a soft camel-hair brush before placing them therein. Should your difficulties still continue, try another brand of plates.

A. M.—Study the "Grammar of Lithography," published at the office of this magazine.

OTTAWA.—If the plates are good, you have clearly under-exposed them. With a dense yellow negative, such as you describe, and using daylight, a positive obtained by contact may require as much as forty seconds' exposure. This is often the case with soda-developed negatives which have not been submitted to the action of a clearing solution.

### NOTICE.

Matter intended for insertion should be legibly written, ON ONE SIDE OF THE PAPER ONLY; and white, not blue, paper should be employed.

All matter must be authenticated by the name and full address of the sender; both as a guarantee of good faith and to secure safe return if ineligible.



# ✻ THE CAMERA ✻

A Monthly Magazine for those who practise Photography.

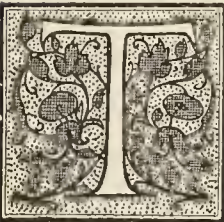
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## Sayings and Doings.



THE Photographic Conference, held on Feb. 8, has been a very great success, and the Honorary Secretary of the Camera Club, Mr. Davison, to whose energy and business tact that success is mainly due, must be congratulated on the results of his efforts to make it so. The papers read were full of interest, and the members of the Club and their friends, from the early hour at which they met in the morning at the Hall of the Society of Arts to the decidedly late hour at which they parted after a jovial dinner at the Holborn Restaurant, never knew a moment of weariness. Every one present seemed determined that the affair should go off well, and it certainly did so.

THE first paper read was that by Mr. Adcock, which we print on another page. This gentleman is so well known as an exhibitor of large direct studies of the human face, that he was welcomed by friends and strangers alike as a personal acquaintance. His paper is, as will be seen, full of original thought, and it was illustrated by some capital studies of hands, &c. When looking at these studies it struck us that Mr. Adcock, or some other persevering amateur might do signal service to the world at large, by taking a series of photographs of female *feet* (not hands) from the cradle to womanhood. The beautiful arched foot, and the detached, thumb-like toe—seen in childhood—would, in such a series, gradually give place to the foot distorted by tight boots and high heels.

These latter deformities might then be compared with photographs of the feet of a Chinese lady where such distortion is treated as a fine art. In England such a thing is excusable because "it is the fashion." In China it is barbarism.

WE have heard much of late of the want of permanence of different modern processes, and although the various processes in question have come well out of the battle, it seems to have occurred to no one to say a word about the remarkable permanence exhibited by certain methods of photography which are now almost forgotten. The beautiful daguerreotype could certainly boast of imperishability, and the many who possess specimens of this old process will bear witness to the fact. But later on in the history of photography we find a process which, judging by examples now before us, and which are as fresh-looking as the day they were produced, possessed this attribute in a high degree. We allude to the Positive Collodion process.

THOSE who have hardly reached middle life will remember that this method was the cheap process by which a picture could be produced "while you wait." It was the process advocated by the tout at the shop door—as the more convenient ferrotype picture is to-day—and although it could not compare for one moment with the results possible now, it possessed certain characteristics in speed of production, freedom from grain, &c., which were valuable qualities.

PARADOXICAL as it may seem, the collodion positive was essentially a negative image. That is to say, it was taken direct in the camera on collo-



dionised glass; but the image was purposely so thin that when afterwards backed up with a layer of black varnish it gave a positive effect. Sometimes the image was whitened by the application of mercuric chloride, but this addition was by no means universal.

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THOSE who may have any of these old-fashioned pictures, and may wish to obtain enlargements from them, may do so with the greatest ease. We were lately asked to advise a method of doing this, and the first experiment made proved to be so eminently satisfactory that we record it for the benefit of others; although, perhaps, it may not seem to have any great originality about it. We took the glass positive in question from its metal frame, scraped off the black varnish from its back, and treated it as a thin negative. Using a three-wide mineral oil-lantern, we cast its image upon a sheet of Eastman paper, and, with an exposure of eight seconds, obtained an enlargement of six diameters of astonishing beauty. We venture to think that a new application of gelatino-bromide paper is thus indicated.

+ + +

WHEN such a painstaking and clever lanternist as Mr. Lewis Wright dubs a new thing in oxygen-gas-making as "a valuable wrinkle," it is sure to be worth attention. Those who have made gas according to the usual formula with potassic chlorate and manganese, will know that sometimes the gas will rush off with alarming speed. The "wrinkle" alluded to was lately published by Mr. E. Holland, but we fancy that it appeared in print originally some years ago. Here is the mixture recommended:—Potash, eight parts; manganese, two parts; common salt, one and a half parts. The addition of the salt is said to cause the gas to come off in the most orderly manner, and in instant response to the amount of heat applied to the retort.

+ + +

WORKERS with the optical lantern will be interested to learn that the electric arc-light has recently been applied to that popular instrument in Philadelphia, in connection with a special meeting of the Photographic Society of that city. Our American friends have the advantage of electrical wires running under their pavements, from which the necessary current for such an experiment can be readily obtained. In our country, either a private dynamo-machine must be employed, as it was quite lately at the Society of Arts, or the experimenter must go to the great trouble and expense of setting up a battery. We shall, therefore, probably have to look across the Atlantic for the practical application of the arc-light to the purposes of screen projection.

## PANORAMIC PHOTOGRAPHY.

BY W. E. WOODBURY.



PANORAMA, in popular phraseology, is a picture of an oblong form, embracing a wide, angular extent of subject. In photographing landscapes from an elevated point of view, so that the view appears panoramically, or in the taking of very large groups, the panoramic camera becomes at once of great use to the photographer. The first camera of this kind was constructed in the year 1847, by a M. Martens, of Paris; this was, however, very shortly afterwards superseded by the one invented by Sutton, and described in his "Dictionary of Photography," 1859. The former was constructed for cylindrical daguerreotypes only; but with the latter paper could be used. A cylindrical glass was employed, and the negative paper bent so as to press against it. This was soon afterwards discarded in favour of cylindrical guides at the top and bottom, against which the paper was pressed by means of a curved board at the back. The next improvement consisted in attaching the paper to a thin sheet of vulcanite or other substance which was capable of being bent to any degree of curvature required. Cylindrical collodion plates were also used; but this, of course, necessitated the use of similarly curved printing-frames, &c. These plates had also to be curved in the form corresponding to the rotation of the camera around the axis situated exactly below the centre of the lens. It will be easily seen that, if flat plates had been made use of, the upper horizontal lines of the picture would be curved in an upward direction, and the lower ones in a downward. The perspective in a panorama is not the same as that known as plane perspective. Where a view is desired to be taken in panoramic perspective, every portion of that view must pass axially through the lens. In cases in which the perspective is plane—that is to say, in ordinary photography—only the centre portion of the view fulfils this condition, the remainder being depicted obliquely. Therefore, the conditions necessary for the formation of a panoramic camera are that the camera must be mounted on a pivot and the lens directed successively to every part, on a horizontal plane of the picture that is required to be taken, the sensitive plate having been shut out from the light, except a narrow strip behind a slit. Behind this slit the plate must pass from end to end while the camera is being rotated on the stand or support. Wide-angle lenses are now made, by means of which such an enormous extent of subject can be included upon the sensitive-plate that the necessity for panoramic lenses has almost entirely passed away. But still, notwithstanding this, the



photographer often meets with a subject in which the lateral range is so large as quite to transcend the powers of any lens. Take, for instance a long range of mountains, lake scenery, or a long range of buildings—in fact, anything that has extension in any considerable degree, will defy the powers of any ordinary photographic lens to produce it. The most practical form of panoramic camera made at the present day is, I believe, the one manufactured by Dr. Liesegang, who purchased from Mr. Sutton the French and Belgium patents of his camera; but he afterwards very much improved and simplified the whole apparatus to its present form of a simple rotating one, to be used with either collodion or gelatine plates. The apparatus consists of a very firm stand of the common tripod form, which carries a large polished table, to which is fitted a pivot or axis upon which the camera turns; and the pivot is so adjusted as to fall into the same plane as the optical centre of the lens. These cameras are made in two sizes for plates  $19 \times 9$  and  $23 \times 11$ . Inside the camera a flexible band is fitted in front of the plate; this band has a narrow vertical slit, through which only the middle rays pass which form the image on the sensitive plate. The slit is about a quarter of an inch wide, but widened out a little where the near foreground falls, in order to secure a longer exposure for that part of the picture, and thus impart greater uniformity to the negative. The two motions of the instrument—viz., that of the camera on its axis and the motion of the dark slide, which is supported upon little wheels and runs from right to left, are performed by a number of ingenious pulleys. After focussing, the operator has only to turn a handle, placed at the side of the stand, to take in the wide scope of the horizon or a group arranged in a semi-circle around the instrument. Some months ago I had the pleasure of looking over a set of magnificent views taken by Schultz, of Riga. They were made with this rotating camera, and were of a uniform size, viz.  $21$  by  $10$ . The manipulation was without doubt faultless—perfect details and wonderfully good definition everywhere, even in the shadows of the dark foreground objects. Several of the views contained a fine natural sky, one or two were pictures of interiors taken with an ordinary portrait lens,  $2\frac{1}{4}$  in diameter and  $6\frac{1}{2}$  in focus, on a plate  $23$  by  $11$ . When such an apparatus is not possessed by the photographer, his only plan is to take several views in succession, rotating the camera on its stand a certain distance between each. By this means a series of views can be obtained which will give a fairly good representation of the scene, however extended, if placed end to end. Yet this is not by any means a true panorama in a perspective point of view, but a photograph possessing a combination of

plane and panoramic perspective. In a landscape this defect will never be noticed, but when a series of buildings forms the subject, then is the result most painful, even to the most uneducated eye. When a succession of views has been made in this manner, it will be found far preferable to mount them, say, a quarter of an inch apart. By this means the transition of the perspective and difference in tone will not be so easily noticed.

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## PORTRAITURE.

BY J. F. MOSTYN CLARKE.



THE most difficult branch of photography is portraiture; and not only is it the most difficult to learn, but it is also the most difficult to treat well in words, for the correct delineation of the human form being the highest branch in all the arts, it therefore requires the most skill.

If the beginner have not already a knowledge of the art, nor an acquaintance, somewhat familiar, with the works of painters of note, he will find his own work the easier, it is needless to say better, by studying the celebrated figure-pieces and portraits in the National and other galleries, especially those of the Old Masters, Sir Joshua Reynolds and Thomas Gainsborough. Among the first, Murillo's "Spanish Boy" may be studied for the lighting of a face almost wholly in half-tone, and the management of the high light on the shoulder and cheek. The child in the same painter's "Holy Family" is a beautiful example of the action of a figure; the lighting in it may also be noticed for the method with which all the surroundings are made to tend to the principal figure. Van Ostade's "Portrait of a Boy" is another picture full of lessons in portraiture. Of the two latter masters, "Portraits of Two Gentlemen," by Sir Joshua, teaches the arrangement of two figures in the one picture, neither attracting more attention than the other, at the same time it being complete as a whole. "Portrait of Himself," by the same, should be observed for the high light. In Gainsborough's "Parish Clerk," the carrying on of the light to the hand and top of the book show the value of balance in light and shade, while the shadows of the face should be specially noted. For the management of background in reference to figure, George Romney's "Parson's Daughter" can teach us much, by observing that it is darkest at the base of the picture, becoming lighter towards the centre, and darker again at the top, thus giving the feeling of atmosphere. Sir John Opie's picture, "Mary Wolstoncraft," is a fine lesson in the turn of a head. And lastly, for figures and landscape combined, "The Vagrants,"



by Walker, should not be overlooked, as this picture in itself may be said to teach everything. In the landscape the light and shade and lines all tend to the highest light in the distance, while, in the figures, the movement and repose, grouping, and the effects of out-door lighting on the faces should be observed; while, finally, lines of drapery may be learnt and understood in the standing woman's figure. Also, it should not be omitted to notice the yellow tints of the farthest middle distance placed immediately against the distant blue, that makes the spectator feel the stretch of country lying between, though out of sight — photography may be made to render this effect quite correctly, as blue, the colour for distance, photographs light; while yellow, according to its admixture with other colours, is rendered darker.

These are only a very few of the works that may be studied; but, to the writer's mind, they are those most full of teaching, and are specified in the hope that what has been said will guide the beginner to what he ought to study, and to what he should see in each. He will find by close observation how nearly allied in their work are the colours them-

selves and the shades that represent them; but to render them truthfully in a photograph, great skill is required in the knowledge of their work, and action on the silver salts.

In looking at all good portraits, it will be observed that everything is made subservient to the figure; not only that, but tending to it; and in the figure itself, all the lights are subordinate to the light on the face, which is the principal object. Hence in the studio the background should be selected very carefully. It is a good plan, if the room be given entirely to work of this and kindred natures, to have the walls papered with some

patternless paper of a light-reflecting colour; pale blue-grey is about the best, as it will reflect sufficiently to brighten the side of the figure away from the centre of light, at the same time it will not give a white result with long exposures. Others of different tints, or partly shaded, may be used, being kept rolled tight to prevent creases when not in use; but these can be dispensed with if the photographer learn to shade the permanent one by using screens in various positions, causing them to throw soft shadows, that will darken it in the proper place without intercepting any of the rays

falling on the figure from the centre of light — which should have curtains of some gauzy material for drawing over when necessary.

Now, to make a good portrait — by that I do not mean merely a representation of the sitter's features, but a picture representing individuality — many things are necessary which must be carefully observed and thought about. This can best be explained by reference to the illustrations, practice afterwards giving rapidity to the process.

Fig. 1 is an example of a face wholly lit, or nearly so, three-quarters full. It will be readily

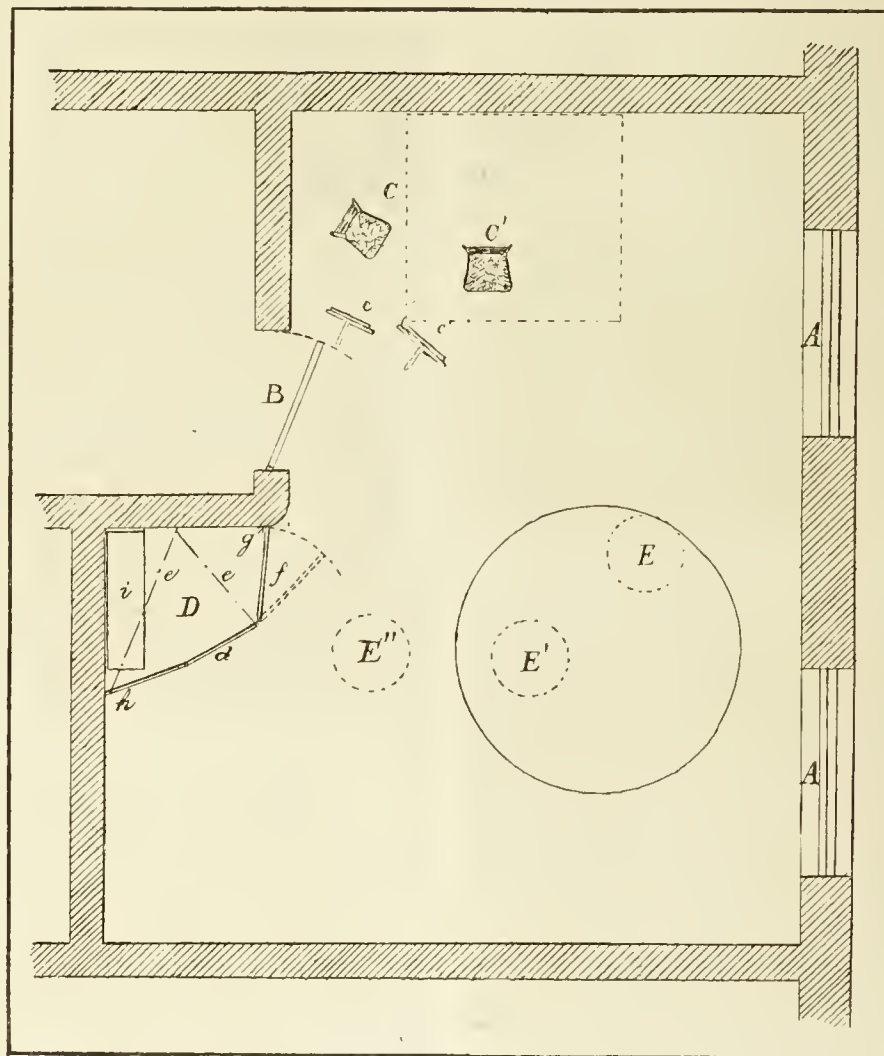


Fig. 2.

seen, in studying the features, that few other positions would suit them so well as the one chosen. On account of the largeness of the forehead and mass of hair, the face is tilted a little upward, to avoid exaggeration by the lens. This is correct, for in the sitter the preponderance of forehead and hair is lost in the colouring; strip them of their colour, and they become remarkable. As to lighting, full light is chosen as best giving the sharpness of the nose, character of the mouth, and soft curves of the cheeks and chin. The pose of the figure is natural to the position of the hands and arms, which are so placed to express indi-





Fig. 1.



Fig. 3.



Fig. 4.



Fig. 5.



viduality; thus, by choosing a pose fraught with characteristic occupation, we have greater chance of obtaining a natural expression through the sitter feeling at home, less conscious of herself, and more of her individual bent or trait.

Now, let us look at the balance of light and shade. It is clear that the principal object, or part of the picture to which we wish to lead the eye, is the face. This must be done without making its lighting garish or too white, yet it must necessarily be the lightest part. We seem, so to speak, to enter the picture from the centre of light, following the rays to the book and hands, from there we follow the line of the sleeve to the face. This being the principal part, we must, to render it natural and effectual in some way, balance its lightness, which is done by shadows at the back of the head and figure darkening towards the base of the picture, until its darkest part, the black table-cloth, is reached, giving forward balance to the lightest—the face.

In contemplating light and shadow, we must not forget the lines. The line of the figure balances the backward inclination of the head; while the line itself is balanced by that of the chair-back and fore-arm; which latter, resting on the book and table, gives a natural repose and ease to the whole.

The larger amount of room is left on the side towards which the face is looking, so that it may appear to have plenty of space to look out on.\* Here, again, may be noticed the tendency of the human soul to soar to things above and beyond, in our feelings when looking at portraits, in which this law of space has been reversed, for then we feel that the one depicted is suffering a species of imprisonment. As far as this feeling alone is concerned, the figure may be placed as far backward in the picture as we wish without offending; only what would offend us then, if its position was not well balanced, would be the one-sidedness (*i.e.*, want of balance in composition). Hence we learn the relative positions of the subject, and the subordinate details in the picture.

It may be observed that in all the representative arts, especially drawing and painting, only such details should be introduced as are worth rendering to the best of the artist's power.

For the mechanical arrangements necessary to obtain the results shown in this portrait we must refer to the diagram (Fig. 2). The position C was chosen as the best to render a full-lit face, with the camera in its relative position, E; so that the rays from the centre of light, A (a window, with its sill three feet from the ground, and four feet six inches high), might fall softly upon the features of the sitter at C; this is the reason for placing her so far from the centre of light. It

was now found necessary to lighten the shadow side of the face slightly, which was done by means of a reflector (a small mirror) in the position *c*. It was at the same time made to reflect its light on the back of the shoulder and hair, as by reflecting light on the former we avoid a too-sudden transition from light to shadow. The deep shadow in the table-cloth was obtained by black velvet, which photographs darker than any other material. The exposure given was forty-five seconds on a bright day, being made thus long, in order to do away with the small irregular marks, that show in the negatives of shortly-exposed portraits, rendering the artless practice of retouching so necessary.

Fig. 3 is a specimen of a three-quarter face, with the smaller part in shadow. Here, again, the position is chosen in accordance with the characteristics, and, having made so many observations in reference to this when treating Plate 6, we will allow the reader to analyse the study for himself; but it may be noticed in passing that the face, although childish in reality, might, without due care, have very easily been converted into that of one considerably older than the original herself.

As to the pose of the figure, little need be said, all that is noticeable being sufficiently palpable. Here, again, it was a desideratum to have the hands visible; for there is considerable advantage in rendering the hand, when it can be done without detracting from the face. To do so in this portrait, it was necessary to place them so that, without destroying their lines, or showing them out of proportion, they shall yet be subordinate to the chief part—the face.

There are also other advantages in this position being chosen for the hands; one in its being such that they may be made to carry the weight of figure, and give it action in repose, which action makes leaning forward most natural, while the photographic object gained by the leaning forward is the prevention of the hands appearing too large, as they must otherwise do through the action of the lens.

As to light and shade, the shadows are managed so as to make them lead to the chief light.

In the balancing of the lines, the lines of the head's tilt and figure are balanced by those of the arms and lower part of the figure, which in turn are balanced by the lines of the chair-back, giving support to the hands; so that the figure may be said to be poised from this point, while the picture is given base-balance by the shadows thrown upon the background.

The lighting being necessarily from the side, with very little light from above, the original was placed on the daïs shown by the dotted lines around *C'* in the diagram (Fig. 2), *C'* being about the position for the sitter's chair, and *E'* the relative position for the camera. It will be observed

\* See "Landscapes and their Composition," in the CAMERA for February.



that in lighting a three-quarter face, such as this, the position  $C'$  is moved nearer the centre of light. and for this reason: The quarter of the face in shadow requires to be in very decided contrast with the lighter portion; so, by moving the face nearer the centre of light, we make the high light stronger, while the action of the reflector remains the same, its position—there being no deeper shadow on the nose to contend with, as in Fig. 1, being as nearly as possible at  $c'$ .

Fig. 4 is an example of a face almost full, we may call it seven-eighths, with the larger part in shadow. The whole position here has been chosen to render the characteristic repose of the original, the position of the hand and fan, in conjunction with the pose of the head, giving the feeling of stillness, which the natural calmness of the features were justly relied upon to confirm.

In the lighting, with so much shadow, it was necessary to have the centre of light higher than in either of the preceding studies, in order that there might be a shadow beneath the chin, and a shadow cast within a shadow, giving the soft curves of the darkened cheek.

As to the position of the figure itself, there are many facts which must be observed and carefully attended to. This being only one-quarter full, it is necessary to give a decided feeling of distance to the far shoulder, which is done by placing it a little lower than the near, at the same time putting it slightly out of focus in the camera (this is purely photographic, on account of the lens). The reason for placing the far shoulder slightly out of focus is the same practically as that given for so placing the distance in a landscape, with this difference: that in landscape we may be leading to the distance, and do so to give aërial perspective, while in the portrait we have this reason, and also that of making the far shoulder subordinate to all else: for what we use in putting in that shoulder is its broad mass to give balance. It is a point beyond the principal object, and has no use in leading to the face; on the contrary, the eye drops gently to it while looking at the face.

From the darker shadows to the right in the base of the picture, the eye follows the line of the fan, hand, and arm, so reaching the broad play of light on the front of the figure; from whence it is taken to the face, the hand being kept low in tone to prevent it unduly obtruding itself. The lines of the chair-back give the direction to the figure; their other use being to indicate the object upon which the sitter is resting, without being high enough to destroy the simplicity of the line of the shoulders, which is balanced by, and in contrasted composition with, that of the face. The line of the figure is further balanced by that of the arm and fan.

The back-ground here has been so arranged

that, while subserviently leading to the highest light, it gives the feeling of distance between the figure and itself; it may be noticed that to confirm the sense of balance it has been made darkest just above the hand and fan, which necessitates the latter being low in tone, this being what they need to make them a subordinate light. It may also be noticed that the back-ground is arranged slightly darker where it meets the outline of the cheek and throat, while, where it supports the outline of the hair and darker side of the figure, it is caused to be a little lighter.

Looking at the diagram, the position in the studio would be a few feet nearer the window  $A$  than  $C'$ , or about on the corner of the dais, as it is shown; the reflector being moved to its correct relative position, and brought to bear well on the shadow side of the nose.

In Fig. 5 we arrive at our last example of the lighting of faces, before proceeding to treat the full-length figure. The face, it will be seen, is not the lightest part of the picture, it being in what is known as "half-tone." Passing over the position, we come at once to the light and shade, and lines.

Although the face is not the lightest part, all the lighter are subordinate to it through their being broken up, leaving the face the broadest mass of light. The lines of the nearer sleeve lead us by the line of the neck to the face. The line of the figure, being nearly perpendicular, is supported on either side by the lines of the sleeves; that of the farther sleeve, in conjunction with the curve of the lace, supporting the slight forward action of the head. The background is kept low and even in tone, and may be noticed with quite as much reason as in the last.

In the studio, the position for this portrait was slightly more forward and considerably nearer the window  $A$  than  $C'$ , the back of the figure being naturally turned towards it, and the lighting of the face effected wholly by the reflector. The position for the camera would not be very far from  $E''$ .

Of full-length figures and their arrangement, Fig. 6 is an example. In this class of portrait, the arranging generally gives a considerably greater amount of trouble than any of those we have treated as yet; it is better, as has been done, to choose some position suggestive of a favourite occupation. The violin here carries out the idea, more especially as it calls attention to the musical type of face and hands.

The face itself is the highest light, and is led up to by the surrounding half-tones and shadows. For instance, the eye alights on the bow and arm, with the ribbons beneath, and from there is led by the lines of the sleeve, to the face. It will be seen that if the bow, arm, and ribbons were lighter than the face, the eye would not easily travel from them to it. The lines of this picture should be care-



fully studied ; that of the figure receives its direction from those of the chair-back, which help to balance it, while receiving its real balance from the far arm, by which the weight of the figure is supported. The line and turn of the head is helped by the line of shoulders ; and the folds of the dress, by repeating the line of the arms, strengthen the support they give to the figure, besides helping to lead the eye upwards to the face, whither most lines in the picture tend. As to background, it is left as even in general tone as possible, except where the dark grasses are introduced to throw the eye downward, and counteract the base-balance, which otherwise would be a little heavy.

The position in the studio was the same as for Fig. 4, only the figure was turned towards the centre of light.

We now reach an entirely different class of portraiture — that done out of doors, such as is given in Fig. 7. This may be classed as the most simple style, but its very simplicity is often its greatest difficulty ; in other words, there are some who would destroy the simplicity by causing the subject to don the most elaborate costume. For instance, a young lady in ball costume is a little out of keeping with her surroundings, when standing near a rose-bush, fanning herself, in broad daylight. Therefore, if a photographer has studied his subjects well, he is bound to have noticed that people, when at home in the country, wear, as a rule, simple garments, and, to give simple and natural pictures, should be depicted in such.

There are many things in regard to arrangement

that may be noticed in this picture, to be considered as representative of its class. It is a combination of landscape and portraiture, the landscape being used to support the figure, in which case the former must not be too prominent. Thus we render the distance, and the foliage around the head, decidedly out of focus, while the figure and the details showing the occupation are rendered sharp. The face being in half-tone, it was necessary to choose for its background something giving

a darker tone which would call attention to it, without leading the eye away from the complete figure, for it will be seen that here the complete figure, and not the face, is the principal object ; so that everything is caused to lead to the figure. We enter the picture by the dark trees immediately beneath the sky, and are so led downwards at once over the figure ; the rose-bush preventing the eye from wandering farther.

The white apron is balanced by the light on the lower part of the back of the dress, foot, and grass, the whole being balanced by the dark shadows beneath the rose-bush, and on

the adjacent portion of the figure and grass. It is needless to point out that this picture was taken late in the afternoon, in order to secure the level rays of sunlight. Effects of this kind can only be obtained by a careful and constant watching for them ; this is also true as regards all outdoor work.

The female figure has been chosen by the writer for his examples on account of the greater difficulty of arrangement ; all that has been said applying to the male, while there is no difficulty in depicting the



Fig. 6.



form of the limbs through the drapery, a man's ordinary dress doing so of itself.

Before proceeding to the question of exposures, a few words may be said on the subject of the proportions of the boundary lines of pictures, which are, in some cases, the actual frame. It will be enough to suggest the two following facts, resulting from observation, leaving the reader to reason and apply them for himself:—

The length and breadth of the frame must be relatively proportionate to the length and breadth of the figure shown.

The distance between the top of the frame and the highest point of the head will be found to decrease, and that between the side of the frame and face (on the out-looking side) to increase, proportionately as the length of the frame increases over the breadth, and *vice versa*. In other words, in a full-length picture, such as Fig. 7, we have a figure considerably longer than it is broad, and a distance considerably greater between the side of the face and frame than between the top of the head and frame; while in any of the half-length plates, such as Fig. 1, these distances will be found to be more nearly alike.

By the word "frame" in the above is meant the boundary-line of the picture itself, and not the outer frame.

The exposures necessary for portraits taken in a studio such as has been described, cannot be otherwise than protracted; therefore, it is well to choose such poses as will be the least trying to the sitter's powers of remaining at rest. Those given

for the portraits shown in Figs. 1 to 6 were all nearly a minute in duration; this must be even more protracted if the weather be very dull; while on foggy days it is better to attempt nothing.

The reason, as has been before stated, for this great length of exposure is, that without it we should have no broad sweeps of light and shade, but rather patchy results. For the exposures of portraits out of doors, such as Fig. 7, a shorter time is required.

—about five to ten seconds, according to the state of the light and the time of day, the light being strongest from about eleven until two o'clock, and considerably weaker after three, in summer. A good idea of its varying strength can be obtained by the beginner experimenting with sensitised paper at various hours. As to the stops to be used for portraits in the studio, a medium ( $f/8$  or  $f/16$ ) has been found to give the most satisfactory results, as this size does not protract the exposure, while it keeps the high lights under control. For

out-door por-

traits, the rules are the same as those for landscape.



Fig. 7.

PLYMOUTH MECHANICS' INSTITUTE.—Last evening Mr. T. C. Hepworth, of London, gave a carefully-prepared lecture on earthquakes and volcanoes, prominence being given to those of recent years. The lecturer's views of portions of the eastern counties affected by the last earthquake in England were especially good, and the more interesting as they were from photographs taken by him on the spot the day following the earthquake.—*Western Daily Mercury*.



## RATIONAL DEVELOPMENT.

BY ANDREW PRINGLE.

(Read at the Photographic Conference held in the Hall of the Society of Arts, Feb. 8, 1887).



HAVE some reason to fear that we are all of us too apt to look upon development as a mere mechanical, or chemical, or at least technical, operation—necessary, certainly, but objectionable, and unimportant, so long as we get a negative that will yield us technically good prints. But I have equal reason to know and to assert that this is a very erroneous and very fatal view to take of one of the most beautiful phenomena to be found in science, of one of the most interesting actions observable in Nature. With the beauty of the operation I have nothing to do at present; if any one deny it he must be curiously constituted. My point is to try to show the importance of *rational* development in the production of artistic photographs, and also to inculcate intelligence in the operation of development.

I wonder how many British amateurs have ever tried the effects of different systems of development upon plates, equally exposed, on the same or similar subjects. I wonder how many amateurs could say, even in a general way, what are the results of slow and rapid development, of abnormal quantities of the reagents and the restrainers, or even of the various kinds of development—pyro, ferrous oxalate, and so on. A great many amateurs, I fear, could not answer in a satisfactory or assured way at all. There is too much of the “15 drops of A and 5 of B” knocking about for satisfactory answers. “A thing that will print” is the definition of a negative for far too many people.

Now the immediate object of my remarks is to draw attention to the effects of modifications in development, and to suggest how we may use these modifications, so as to get, not merely what we call “good negatives,” but negatives that will give us prints correctly and artistically reproducing our subjects, and, moreover, reproducing them in the aspect we desire. When we buy a dozen plates, we get with them a formula more or less arbitrary and intricate; these formulæ are useful, as suggesting the normal qualities or the weak qualities of the plates. For instance, when, with some trouble, I have analysed a developing formula, and find an unusual quantity of pyro, I at once suspect that batch of plates to be one likely to give me thin, poor negatives, unless I take care. When, on the other hand, I find the formula gives a less than usual quantity of pyro, I expect a plucky, perhaps hard, negative, apt to want half tone. When I find the alkali larger in proportion to the restrainer

I suspect the maker of a wish to get for his plates a reputation for great rapidity; and when I find the restrainer powerful I expect a plate with just a tendency to fog, or else a plate intended to allow of a long exposure, such as some workers seem to demand. Every time that I get a new make of plates I analyse the developing formula, and carefully note the proportions of the ingredient, but I never attempt to make up a formula precisely in the arbitrary and, as a rule, intricate manner formulated. But, surely, no man in his senses can ever dream that any one formula will suit every case; any one who has developed a dozen negatives must surely know better than that. And yet I venture to say that a vast majority of us try to develop all our plates alike, be our subjects what they may. Mountains, waterfalls, glens, churches outside and inside, clouds, seas, glaciers, coal-mines—all alike, “15 drops of A, and 5 of B.” That is what the maker’s formula says, and who should know, if the maker of the plates does not? After our development has gone a certain length we find the need for modification, but we always begin with the formula. Now, I want to chuck formula aside altogether, and use intellect instead. A formula ought to be simply a convenient method of keeping our re-agents, and—the important point—of getting precisely the quantities of re-agents that we require. A formula cannot be too simple. Plate-makers and many other people seem to think a formula cannot be too complicated, for among the many formulæ I have seen I find all sorts of queer odd numbers of grains and drachms, ounces avoirdupois, and ounces chemical, Winchesters, pounds of various kinds—in fact, every kind of figure to confuse and annoy one. There is nothing talismanic in half a grain, nor any virtue in such a number as  $7\frac{3}{16}$ . What we want is to get, without trouble or loss of time, a certain quantity, not of A or B, but of certain known chemicals. The “A” and “B” business has spoilt, in my humble opinion, a vast number of amateur photographers. They rack their brains to calculate how much they require of A, even if by chance they know the chemicals which compose A, and they do not think how much pyro, or alkali, or bromide they require. A formula should be of such a nature that you can’t measure it without knowing how much of its essence you require. Now, I do not care what strength we make our solutions, so long as we know precisely what they are, and how to extract from them precise quantities of our reagents, but for development I find 10 per cent. solutions by far the most convenient. Everything that is not used stronger than 10 per cent. I keep in 10 per cent. solutions—pyro, ammonia, bromides, citrates, potash, soda, gold chloride, soda acetate, &c. Put an ounce into a measure, and make up to ten ounces after



solution—that is the whole affair, and ten minims are always equal to one grain; or, put in a drachm, and make up to ten drachms; or put into fifteen grains, and make up to 150 minims. In all cases ten minims equal one grain. The advantage of this or a similar method is that one is bound to know what quantity of reagent is used, and so development becomes an intelligent, not a blind, operation.

One formula, in particular, appears to me of the “talismanic” order, which quality accounts, no doubt, for its seeming popularity among amateurs. I hardly ever see an amateur paper without some question or other about the “Beach” Developer—so called, I understand, after the illustrious President of the New York amateur society. I confess I never made up a developer in this precise fashion, so there may be in it some virtue unknown to me; but as it stands in the Almanac of this year, it looks to me anything but promising. In the first place, it is a mixture of avoirdupois ounces—not exact—and chemical ounces, which is a bad start. Then it contains a very extraordinary proportion of sodic sulphite when the developer is mixed complete. I cannot see any need for such a quantity, even if sodic sulphite is the best, or a good, preservative, which lately I have begun seriously to doubt. The pyro solution looks something like ten per cent. (Mr. Beach states that one drachm contains six grains of pyro, which means ten per cent., but I have not tested this), but the potash is an arbitrary measure, and calculation is required to discover how much potash we have in “twenty minims or a quarter of a drachm.” The developer may be a good one, but it is certainly not a simple one, and simplicity is important if we are to work with intelligence. If you want a good and perfectly simple pyro solution, dissolve a chemical ounce of bisulphite of potash in about eight ounces of water, and mix in a chemical ounce of pyro, finally making the bulk to ten ounces. As pyro is sold in ounces of  $437\frac{1}{2}$  grains, if you want to be very accurate, make the bulk to  $4,375$  minims = 9 ounces 55 minims. This requires no addition, works beautifully, and keeps for a very long time. I ought to say that I get my bisulphite from Messrs. Mawson & Swan, under the name of “meta-bisulphite of potash.” I can discover no difference between it and the ordinary bisulphite.

Never, on any consideration, should the chemicals be mixed. For years I kept my bromide and alkali mixed, but I look back upon that time as a sort of nightmare. I cannot understand why for so long I deliberately handicapped myself in the race. It seems monstrous to bind yourself in such a way that you can't get ammonia without bromide, except by having extra separate

bottles. Nowadays I would as soon put hypo into my ammonia or pyro as bromide. The great advantage of keeping each chemical separate is patent when we consider my next point, which is that very seldom ought two consecutive negatives to be developed precisely alike, that is if we are to carry out intelligent development. If our two consecutive plates were exposed on the same or similar subjects, then, after our first is developed and examined, we may be able to improve the next by modification of development. If the subjects are different the development ought probably to be different, and this brings me—at last—to the real gist of my argument.

I say different subjects require not only different exposures but different development, and on the development depends, not only the technical quality of our negative, but also the artistic quality of our prints. If anybody present is inclined to sniff at this statement, let me ask him to use a very convenient line of reasoning—viz., an extreme case. Take an interior, a dark one, lighted here and there by windows. Certainly, a negative of such a view would not be developed in the same way as an open landscape negative. These are, perhaps, the two extremes, but between these there are an infinite number of gradations, some of which I will touch upon.

When we have a wide, open landscape without any marked foreground, we are certain to run a risk of wanting contrast, as well as fog, in the distance. I would develop such a negative *slowly*, with plenty of restrainer and pyro, but I would develop it fully. An interior is different; we are certain to have violent contrast, so I should, in that case, keep down, or omit, bromide, use very little pyro, but a good strong dose of alkali, and I would not develop it nearly so much as I did the open landscape. Take the case of a landscape not stretching to any great distance, but having a dark foreground of foliage. What we have to fear is the distance becoming too dense before the foreground has all its details out. Here, again, I would certainly begin with little bromide and pyro, but a good dose of alkali, and as soon as I had the dark details out I would add pyro, and bromide and alkali, if required; and this negative I should develop rather quickly, compared with my open landscape, for long development means contrast, *cæteris paribus*. When I fear under-exposure, I keep down pyro and restrainer, and I rather concentrate than dilute my developer. I do not believe at all in the system of watering the developer in such a case, though I know it is recommended by some. I have made many trials with various developers, and I always succeeded better with a short and sharp developer than by watering and waiting. It seems to me wrong, both in theory and practice, to play the watering trick.



We require not only to consider our *fears*, but our *hopes*, when we make up a developer. When we selected our view and made our exposure, we had, or ought to have had, a specific idea and a specific intention. We meant, or ought to have meant, to give our view some particular rendering, to cause it to convey some particular sensation to those who are to see our print. We exposed, or ought to have exposed, with this intention in our mind, but our exposure may be multiplied by our development; and our development, if not conducted appropriately, will either spoil our negative in technique, or, by a discreditable fluke, will cause us to produce a print different, or possibly contrary, to what we intended. So when we start to compound our developer, we must consider what we require as well as what we fear. I am well aware that some people plume themselves on trusting entirely to their exposures, and do not even take notes of their subjects, but develop all their negatives alike, and blindly; this sort of work may sell, but it is not what amateurs want. We want expression in our work, not topography merely. Now, in development we have a mighty instrument for rendering expression. It is, however, impossible to lay down rules hard and fast for the use of the developer under this head, but I shall give a few very general hints on the subject. Lightsomeness, brilliance, contrast, *allegria*—it is hard to find a name for the quality—may be expressed by slow development, plenty of pyro and bromide, and full development. Gloom, mystery, age, and “all that sort of thing, don’t you know?” are more likely to be expressed by a small quantity of pyro, with just enough alkali to give the details required, and in this case the development may be shortened.

In portraiture, development should not be carried nearly so far as in landscape, and just enough density should be acquired to hide facial colour defects. If an outdoor group can be made into a good picture at all, it will probably be done by a good quantity of pyro, and alkali sufficient to bring out all the detail. But I find groups very difficult, on account of the diffusion of the light.

In regard to the alkalies used for development, there seems to be a considerable diversity of opinion. I always use ammonia when I can, but I have no particular objection to soda and potash. Using ammonia, you can have no restrainer if you choose, except that “evolved” from the emulsion; with potash and soda, you have a restrainer, whether you like it or not. If my plates are not tolerant of ammonia, I put them in the fixing-bath unexposed, but I have lost far more plates from using soda and potash than ever I did from red fog, unless I was using very old plates.

What we require in development is to think. We shall never advance a step if we do not

know precisely what we are using, and if we develop blindfold, our successes are half flukes, and our failures serve us right. Away with all unknown and mysterious mixtures, and go for developing formulæ to the fountain head, to the chemicals themselves, and not to *empyrean* bottles—that must be a mistake, surely! *Empiric* bottles, that’s it. And don’t go mixing bromides and alkalies together, incompatibles in development, nor avoirdupois and chemical weights—in fact, never mix your liquors at all till in your (developing) cups.

## NOTES FROM NEW YORK.

BY DR. EDWARD L. WILSON.



I AM very sure the photographers of the universe, so far as they can read and have the soul, will commend with thanks the obliging Editor of the CAMERA for so early in the year “declaring his policy” by the publication of such admirable articles as “Art and Photography” and “Artistic Photography.”

Here is my hand also, and we will try to keep it up during 1887. Already these papers have appeared in print in this country, and I expect to see our contemporaries of France and Germany and Austria and Russia and Italy and India and elsewhere follow suit.

This is the season of the year when our subscribers who have hearts take occasion, when renewing their subscriptions, to either write some nice (and always helpful) codling to us, or else lay out our editorial course for the whole term of their renewal. Among such letters, I received one the other day from a very practical man. He said, with other things, “let our journals drop the A B C and primitive instruction fake. What we want is more articles on composition, lighting, and posing the sitter—on art in photography.” And the gentleman is correct. We want our artists to not only study art, and “get a smattering of it,” but we want them to thoroughly understand its rules, laws, and principles. It is the one thing needful for the salvation of photography, and I am glad the CAMERA editor has focussed upon it so soon. Let there be no “swing-back” or “sliding-front,” neither any “stop” in this measure.

Turning from the artistic to the practical, I do not find much in New York of real interest at present. We are to have the Exhibition of the grand triumvirate of the Societies of Philadelphia, New York, and Boston here soon. The Ortgie’s Art Hall, 845, Broadway, is to be the place, and the opening is March 26, to continue one week. The affair is conducted with much spirit, and will,



no doubt, be very creditable, and much good result from it.

The Amateur Society is to have a rival in America. A "Lantern-Slide Club" has been formally organised in Chicago, with a real formidable membership. Of course, it will have a popular following. As "cream is the best thing on milk," according to Josh Billings, so is a transparency the best thing on glass, and who is there to doubt it? And it requires a careful photographer to make them well. I read with much interest your editorial remarks on this topic. You are happier in your emulsions than I am, for I am not yet persuaded that, for *my* lantern, at least, emulsion slides are so good as those made by the wet process. I never judge a slide "by the eye," but always by its projection upon the screen.

And, speaking of transparencies, I am reminded of a little "wrinkle" I learned from "a photographer with a head," a few days ago. Do you ever remember trying to force dry pyro into a bottle for dissolving, and how it would sometimes "go back on you," or come up to you and put dust in your face, as the heels of a donkey? Well, avoid it hereafter by following the example of the "heady" man—*i.e.* pour a trifle of water in the pyro bottle or box before you begin to empty it. It works.

The preparations for the Annual Exhibition of the Photographers' Association of America have begun. The affair is to come off in Chicago in August, the dates not having been fixed as yet. A cordial invitation to participate is given to all foreign photographers, and the following have been appointed to solicit and receive foreign exhibits:—

Committee on Foreign Exhibits:—Messrs. E. & H. Anthony & Co., Scovill Manufacturing Company (declined); G. Genert, New York; C. Gentilé, Chicago, Ill.

Committee on Progress in Photography:—Dr. John Nicol, Chicago, Ill.; J. Traill Taylor, London, England; Dr. Herman W. Vogel, Berlin, Prussia; Dr. Eder, Vienna, Austria; Léon Vidal, Paris, France; Professor Borlinetto, Italy.

Of course, any one can send his exhibit to whose care he chooses. An art interchange of this kind is always helpful. A plentiful supply of medals is offered as "inducements," foreigners being expected to compete for the following:—

1. For the best exhibit of portrait photography from foreign countries, one gold medal.
2. For the best foreign exhibit of landscape or marine views, one silver medal.

This is not very liberal treatment of our foreign relations, you will admit, and so do I. But I hope the mistake will be discovered in time, and corrected.

Last year there was a fierce struggle among

manufacturers of plates, paper, lenses, &c., to work the exhibition for all it was worth for their own "dollar." So much so, that in some of the alcoves the placards and signs seemed to outnumber the photographs.

This year the committee seem to desire a change, and have issued rules against making the "show" anything but a strictly "art exhibition."

We shall hope and we shall see.

## UNBOILED EMULSIONS.

BY SPENCER B. NEWBURY.

(Read before the Society of Amateur Photographers of New York.)



LAST April I contributed to *Anthony's Photographic Bulletin* an article entitled "Notes on Emulsions," in which an effort was made to give a simple and certain method of preparing photographic plates of any grade of sensitiveness, together with the results of many experiments made to show the effect of different conditions of time, temperature, and proportion of ingredients on the rapidity and character of the resulting emulsion. The only new suggestion of any importance which the paper contained was the method of securing a fine precipitate of silver bromide (in my experience the chief stumbling-block in emulsion-making), which was accomplished by adding first the silver nitrate and then the bromide, both in crystals, to a warm solution of gelatine containing alcohol. I have had several very gratifying letters from friends who have used this formula, all reporting complete success in working it, and great satisfaction with the resulting plates. There are, however, some interesting results to be obtained by using this emulsion in an unboiled condition, of which my original paper contained no mention.

All writers on emulsion-making insist that the emulsion shall be "red by transmitted light." This is a condition which implies great fineness in the precipitated silver bromide, and is very easily obtained by the method given above. In my earlier experiments, using other methods of emulsifying, I used often to obtain an emulsion of which a drop spread on glass and held against the light showed a reddish tinge, and used to suppose that the condition demanded had been secured; but never, until I hit upon this method of mixing, did I see an emulsion which was "red by transmitted light" in the extreme sense of the phrase. The fineness of the precipitate obtained as I have described is such, that a drop of the emulsion spread on glass shows a bright orange-red colour; a drop of emulsion mixed with a beaker of pure water imparts to it a pale blue opalescence, like that of some specimens of refined kerosene; an



opalescence which does not disappear by subsidence, even after standing for weeks. On boiling the emulsion, the particles increase in size, as is well known, and these peculiar qualities disappear. It occurred to me to try the use of this emulsion in an unboiled condition, principally in the hope of obtaining a fine plate, free from granularity, suitable for fine lantern-slide work.

The operation of washing and making up an emulsion of this kind is the same as in the case of rapid, boiled emulsions; the coated plates, however, present, after drying, a very different appearance. Even though quite a heavy coating of emulsion be used, the film, after drying, is so transparent as to permit the shape of a gas-flame to be seen through the plate with ease; the film is extremely glossy, and when held against white light shows the peculiar orange colour of the freshly-prepared emulsion. All who have worked with wet plates will remember that they show nearly the same colour by transmitted light.

These plates are very slow—probably about as rapid as wet plates. They show a Warnerke sensitometer of 2 to 3, and in my hands require for an open view with Dallmeyer's rapid rectilinear lens, smallest stop, about ten seconds' exposure; whereas a rapid Stanley plate, showing 24 on the sensitometer, required an exposure of only one half second. The resulting negative is, however, a very interesting and peculiar thing. The shadows are represented by absolutely clear glass, as in a wet collodion plate, while the lights show every grade of transparent brown colour of increasing depth, like dark-brown glass. These qualities, especially the perfect clearness, good colour, great density, and yet extraordinary range of half-tones, and freedom from grain of any description, make the plate an almost perfect one for lantern-slide work. For this purpose oxalate developer gives, I think, the finest results, although I have made beautiful slides with the pyro-potash developer. The colour of the slide is in either case a dark olive-brown, totally different from the cold grey tone which is always obtained with a rapid plate. The colour can be changed to a deep purple by a very slight intensification with mercury and sodium sulphite, but I do not think that this is any improvement in most cases. I have used many commercial lantern-slide plates, and though some of them are excellent, I have never found any that were in any respect superior to the plates made in the simple manner that I have described. The operation of preparing them is so easy that I have been able to train one of our students at Cornell to prepare the emulsion, coat the plates, and make slides from engravings or photographs, and he is now turning out three or four hundred slides a month for use in the various departments of the University.

As a general rule, it is probably better for the amateur or professional photographer to content himself with the plates which are to be obtained in the market, and not to encounter the many perplexities of emulsion-making. But the operations of making these slow plates are so simple, and the results so certain and so gratifying, that I heartily recommend any one who has become interested in lantern-slides to try the experiment of making some of these plates for himself. And after this task has been mastered, and the manipulations learned, a very slight change in the proportion of bromide used, and half-an-hour's boiling of the emulsion, will give a plate as rapid as any in the market. I shall be very happy to give any further information that may be desired to any one who thinks of taking up this last accomplishment of photography, and can safely say that the pleasure of using the best commercial plates is far less than that of exposing and developing plates prepared by one's own hands.

The fineness of the precipitate of bromide of silver in the emulsion I have described, depends solely on the method of emulsifying, and the amount of excess of soluble bromide present appears to have no effect on the character of these slow plates. But if the emulsion is boiled, the proportion of bromide has a great effect. Using 32.5 grams of silver nitrate, I find that with 28 grams of potassium bromide and half-an-hour's boiling, a very rapid plate is obtained (23-24 on the sensitometer), which has about the quality of the best commercial plates. With 25 grams of bromide, however, the plates are much less sensitive (15 on the sensitometer), but present almost exactly the qualities of the lantern-slide plates, *i.e.*, the same peculiar brown colour and fineness of the deposit. Plates so prepared are those which I prefer for landscape work.

I have made some interesting experiments with these lantern-slide plates made with unboiled emulsion. In the first place, it has been stated that the medium in which the silver bromide is suspended has a great influence on its sensitiveness, and that it is partly for this reason that gelatine plates are more sensitive than collodion. To test this matter, I tried the experiment of soaking these lantern-slide plates in weak nitrate of silver solution, exposing them wet, and developing with an ordinary wet-plate developer, consisting of a solution of ferrous sulphate made strongly acid with acetic acid. The experiments were successful; the plates developed quickly and without fog or stain, giving a result much like a wet plate, but with a more reddish deposit. The sensitiveness was about the same as an average wet plate. Hence it appears that the bromide of silver in an unboiled condition is no more sensitive when suspended in gelatine than in collodion.



Secondly, it has been stated that the sensitiveness of gelatine plates over wet collodion plates is in part due to the fact that since the former contain no free silver nitrate, it is possible to use alkaline or neutral developers, *i.e.*, pyrogallol and ferrous oxalate, which were said to be more powerful than acid ferrous sulphate. I find, however, that if two of the plates be given equal exposure, and one moistened with nitrate of silver solution and developed with wet-plate developer, the other developed directly with ferrous oxalate or pyro, the latter appears considerably under-exposed; showing that the mechanical development is more energetic than the chemical.

It is well known that a rapid plate cannot be moistened with nitrate of silver solution and developed with wet-plate developer without the appearance of fog and stain. The fact that slow plates, made from unboiled emulsion, may be so developed, shows that the cause of this fog is to be found in the decomposition of the gelatine during the operation of boiling. I find, in fact, that plates made from unboiled emulsion may be successfully intensified with pyro and silver, in the same manner as negatives made on wet collodion plates.

### A CATASTROPHE,

AND HOW IT WAS REMEDIED.

BY "DEXTER."



IT has often been a puzzle to me, as I dare say it has been to others, why, and for what purpose, a large number of my fellow-creatures have ever been created. I can understand the use of blackbeetles and other loathsome organisms, for they eat up and get rid of things as noisome as themselves. But why has that very common specimen of the human family, a thing which can eat, drink, and sleep, but is totally without intelligence or the power of thought, been allowed to multiply on the earth to such an alarming extent? Will no philanthropic being start a society for "the utilisation of waste persons," so that something or other can be done to remedy this evil in our midst? Echo answers "No," for such persons can never be utilised.

This tirade upon my fellow-creatures—which was originally a soliloquy lasting some hours, and which I have reduced to the few lines printed above—is much spoilt by being presented to the reader in this brief form. The flowers of rhetoric which adorn my speech when I am angered, the wealth of robust adjectives which run so trippingly from my tongue on such occasions, have been omitted, for my grievances have to be stated with the aid only of the mere dictionary words available to the ordinary writer.


But enough. Let me state the reason for this angry outburst, and at once I shall secure the sympathy of the indulgent reader. The young lady who is kind enough to act as housemaid to the establishment of which I am facetiously called the master, is singularly wanting in intelligence, or, to use the expressive but homely language of her fellow-servant, "Sarah was be-ind the door when the brains was given out." Besides this defect in Sarah's internal economy, she is exceedingly clumsy in her movements, and she and "the cat," between them, annually crack, smash, or disfigure several pounds' worth of property. Among my household gods is a certain hall-lamp, in which I took a just pride. It is of hexagonal form, its six sides and its base being formed of figured and cut glass. This was, of course, a very tempting object to Sarah, and, if it had not hung to the ceiling, would long ago have been sacrificed on the altar of her cussedness. If it had only been portable, she would have pulled it about, washed it, cracked it in the operation, and finally left it in an inverted position. (I have noticed that domestics of this type have a faculty of always turning glasses, cups, &c., upside down. It is a tradition with them, I fancy.) But one day last week, Sarah evidently felt that she could be denied no longer. She procured the step-ladder with the ostensible intention of cleaning the lamp; but, instead of doing this, she overbalanced herself, seized hold of the precious thing, tore it from its fastenings, and ladder, lamp, and Sarah rolled over in a confused heap upon the floor. The lamp and the ladder were both smashed to pieces; Sarah, not being so highly organised as they, escaped unhurt. Something else escaped too, for the gas issued in streams from the broken joint above. Sarah having, of course, no smelling faculty, never realised this fact; but, luckily, the escape was discovered by others, and an explosion prevented.

But I must now leave Sarah and her works—and the indignant and long-suffering householder having described the catastrophe, must assume the rôle of amateur photographer and tinker—and must explain how, by the help of both those arts, he was able to put humpty-dumpty together again.

Upon examining my poor lamp, I found that the glass was all smashed to atoms, but the metal frame remained intact. A happy thought occurred to me. Why not fill in these gaps with photographic transparencies? The idea was no sooner conceived than acted upon, and now my hall-lamp looks far better, and more artistic in every way, than it did before Sarah clasped it in her stupendous embrace. Let me explain in detail the way in which I went to work. The lamp, as I have said, is hexagonal, each of the six sides requiring a square of glass measuring twelve by six inches to fill it. Having no suitable



negatives of this size, I at once determined to place a small transparency in the centre of each pane, and to surround it with strips of coloured cathedral glass, leaded together in true ecclesiastical fashion.

Looking through some likely negatives, I came upon a set of orchid studies on half-plates, which seemed the very thing for my purpose. But a transparency with a gas-flame immediately behind it would be altogether lost; for the flame would simply blot out the picture. This difficulty I obviated by making use of Mr. Hinton's new bromide plates, which are sensitised on glass the back of which is "ground." Developed with ferrous oxalate, these plates came up densely and well, and answered my purpose admirably. In order to guard the transparencies from dust and damp, I varnished each one, and after cutting it down to the sized panel which I had determined upon, namely,  $6\frac{1}{2} \times 3\frac{1}{2}$  inches, I then bound it to a thin cover glass, just as if it had been a lantern-slide, and put it away until I was ready with the other requisites for glazing my lamp. These requisites were soon collected. A visit to a professional glazier resulted in the acquirement of 3 lb. of lead, ready grooved for use, and having a section of this shape and size , several bits of "cathedral" glass of different tints, some solder, and a composite candle.

I now procured a drawing-board, and carefully measured out upon it the exact space which my pane of glass must occupy to fit the lamp. In this space I roughly drew the design as here shown. With a sharp knife the lead was readily cut into lengths of the size required. The glass was then cut with a diamond, with care that space for lead on every side was duly allowed for; and after some little difficulty the whole design, fitted together so far, was held to the board by tacks against the outer edges. The next operation was to solder the metal joints together, which is by no means difficult to anyone who can handle a soldering-iron. To anyone who is not a tinker born and bred, the following remarks may not be unacceptable.

In using a copper "bit," as it is called, the first operation—without which it is useless—is to well tin it; in other words, to give it a coating of solder, so that it will attract and take up more solder when required. Heat the tool to nearly a red heat. Then file it on all its four faces with a coarse file. Immediately dip it in a solution of chloride of zinc, and then touch it with solder. If this be properly done, the solder will quickly run all over the point of the tool, and will remain

there so long as too great a heat is not applied to it. To make the chloride of zinc, drop a few scraps of zinc into a little hydrochloric acid (spirits of salt) contained in a gallipot, and place the mixture in the open air, or under a chimney, for while the metal is dissolving, noxious fumes are given off. Add one-third of its bulk of water, and the solution is ready for use.

Having once more heated the tinned iron, wipe it on a cloth, so that it may be perfectly free from ash or dust, touch it with solder, so that a drop of the molten metal adheres to it, and you will then be ready to make a joint. But it will be found that the solder cannot be made to adhere to the lead-framing unless the joints are first carefully greased. Here, then, comes in our composite candle. Each joint is smeared with it before the iron is taken from the fire, and, with a little dexterity, at least one dozen joints can be soldered up before the iron requires reheating. When one side of the glass-panel has been thus soldered, turn it over and do the other side. In this way, my smashed hall-lamp was once more restored; and, although it gives less light than of yore, the light is of a soft and mellow tint very pleasant to behold.

I have little doubt that the hints I have here dotted down will lead others to try their 'prentice hands as I have done, at this class of work. So far as I can see, photography has not yet been applied to this particular purpose. For the professional glaziers' use, good transparencies are not obtainable except at great expense; besides, it requires an earthquake almost to move such a man out of his regular groove. Amateur photographers, on the other hand, who can make transparencies with ease, are debarred from leaving their grooves by the supposition that this glazing work is difficult. To such, let me say, *Try it*. Certainly there is a wide field for this employment of photographic transparencies. Objectionable outlooks, fan-lights over doors, panels in other doors, fire-screens, can all be worked out in this way; but if larger panels than those I have described have to be made, an additional precaution must be taken. The glass must be *cemented* into the lead-grooving.

The cement is made thus:—

Whiting .....	2 parts.
Soot or lampblack .....	1 part.
Red lead .....	$\frac{1}{2}$ part.
Linseed oil .....	quant. suff.

Enough oil should be added to the other ingredients to make the mass into a thick paint—something in consistence between paint and paste—and I have found that a little varnish is a useful addition. This black mixture is brushed into the work, so that the crevices between the glass panes and the lead-work are all filled up. The surfaces on both sides are treated in this way, after which all the





SPECIMEN OF "MOSS-TYPE."

*By the Moss Engraving Company,]*

*[535, Pearl-street, New York.*







superfluous cement is wiped off with a cloth and dry whiting. I should say, too, that for large panels, a special thick lead must be used for the outside edges. This is procurable at the glaziers where this kind of work is executed.

## STUDIES.

BY W. ADCOCK.

(Read at the Photographic Conference held in the Hall of the Society of Arts, Feb. 8, 1887.)



Y the title I give to this short paper, I mean detached parts of pictures, as distinct from those composites which, when joined up and employed, we, in a certain sense—not its highest—call a picture. If in a landscape we take foreground, middle, and extreme distance, we get the elements necessary to a picture. If of these we take one section only we should, probably, call it a view. Now, if out of the foreground we took a large thistle, and produced it separately, we might, however pictorially it was treated, very properly consider it a study.

Similar ideas apply to figures. To get a picture we should look beyond a mere bald figure for accessories to give completion to it. In the production of a large and elaborate photograph we can easily see how necessary it would be to study every part separately. The pose of a model, the turn of a head, the exact expression, the disposal of the hands, the folds of drapery, the position of a chair—all would be worked out, not merely by thinking of, but by producing pictorially. In this, photographers only follow in the wake of painters, who, fortunately for the world, give it their first and upward thinkings towards perfection, in the form of studies.

We know how a painter, when thinking of a great work, first makes studies of its parts, then of its components as a whole—often more than once—before he decides how he will treat his finished work. It has been so from the earliest days of art, and the studies of the old masters are amongst the treasures of the world. These are the histories of pictures, and show how first conceptions, crude by comparison, developed into those creations of genius which have delighted until now, and, while they last, will delight, succeeding ages.

A distinguished living painter, a few years ago, took for the subject of his Academy picture that phase of French life we should call “washing clothes on the banks of a stream.” The scene was laid at Etaple, with the village in the distance. He made studies in strong bold water-colour, of each group or single figure for his picture, and then he grouped the whole into a sketch, which could be called a study-sketch, or a sketch-study, and from this he painted in oils his large work.

By purchase, this larger sketch, which received completion as a finished drawing after the Academy picture was painted, together with the preliminary studies, came into my hands, and are not the less prized by me from the greater fame every succeeding year brings to the artist.

It is, I take it, safe to predict that a great master in photography, before deciding upon such a work as “Dawn and Sunset,” and while the subject is incubating in his mind, would make many studies of its parts.

But I aim to-day at creating an interest in one special class of studies. If we go to the Kensington Museum we find studies of hands—for instance—that, from the interest attaching to them, are almost priceless. Why is this? It is because of the marvellous beauty of their drawing. It is notorious that, to the incompetent artist, hands are more difficult to draw than faces, and it is common to find in otherwise fine pictures, a shirking of the hands. They are often an indication of something left to the imagination to say what. In new pictures remonstrance with this defect is met by the remark, “Oh, do not detract from power of the head by minor details.” This, interpreted, means, “We don’t profess to paint hands.” Yet, hands give great scope to the master for brush-drawing. Reverting to Kensington Museum, I would ask what sum would purchase the studies of Mulready, mounted on a single revolving screen, to be found there? They are studies of this order—hands, feet, and detached limbs. Many of these probably were drawn on days too dull to paint in, or on winter evenings. Is there a hint here? Can we, by camera and lens, take hands or feet, enlarge them to life-size, and produce *perfect drawing*? Can we not produce every line of graceful beauty found in the hand of girlhood, the muscular vigour of manhood, and the loose, wrinkled skin of age, with a fidelity few capable draughtsmen would spend time in producing? Before we give a negative reply to this, I say, let us try.

Is another hint here? Would hands, and feet, and eyes, and ears, so produced, have value as copies in our schools, Board and otherwise, where drawing is now so largely taught? This seems to me a question for a professional. I hold up the hint in large letters. If worth anything, use it; if not, let it go.

Perfect drawing, to the trained eye, is ever a thing of beauty. With the lens, perfect drawing can be unquestionably obtained by taking small and enlarging.

What to-day would be the value of a photograph of the hand of Wellington, or say the sword hand of Murat? If these things would be prized by a nation, will an exact portrayal of your hand be without interest to your grandchildren?

The power of enlarging given to amateurs by



bromide paper is almost illimitable. I am only just beginning to find it out. For years I have been working directly, figure, unusually large in size. I like it still, but I am a convert to this, that he who will afford a large lens with advantage may; while he who will be content with a small Rapid Rectilinear (say 8-inch focus) may produce splendid work, both directly and by enlarging. And here, at the risk of telling those who know, I tell all who do not, a lens that will take a plate sharp to the edges will enlarge *that plate* to any required extent. With the size I have named, I take  $7\frac{1}{2}$  by 5, and enlarge up to 23 by 17.

But of studies. Oh, amateurs, what a field you have! Of what *cannot* you make studies—I mean art studies, if you so treat them?

Besides the hands and feet I have specially referred to, what have you not in figure? An expressed thought, an idea, a sentiment, a passion, an act being done—all of these are open to you, with your own room, or, if you prefer it, with your back-yard as a studio, and a blanket on a wall for a background. A turkey is a fine study, a brace of hares, a couple of rabbits, and a couple of ducks; a big thistle is splendid—big as a good-sized gooseberry bush: take two, one growing and vigorous, the other withered and dying—both in bloom, mind that; and when taken and enlarged, look at the drawing of them. The foliage of a growing carrot is beautiful—try it; so is a spray of apple-tree in leaf and bloom.

Then of dogs! Oh! the long-haired little dogs, the Dandy Dinmont, and every variety of long-haired Scotch poodle. What a dog for a study is the colley!

I tell you the facility of enlarging gives you over all these things a power of making them things of beauty. One advantage is they are at hand, and you have not to go ten or twenty miles to find them.

I forgot a cat. I will show you a cat. "A cat" would be your description of it—mine is "My cat." It is a distinction with a difference, which leads me to say your cat would be of more value to you than an unknown one. Colderoy paints cats; as Mark Twain would say, well, Colderoy does, but we cannot all afford to buy the delightful cat he does paint. Will those who cannot, be content with one on bromide paper, as I am? It is a study I commend to your notice.

I will not weary you, but, before my last word, let me say there is nothing in the study which will bear careless manipulation. The diffused bluntness I have held permissible, if not advocated, in large direct work, will not serve in enlargements. A negative must be sharp all over, or those parts out of focus would, by enlargement, be terribly out of drawing; and what I am advocating is *beauty* of drawing.

To the beginner, and to those who have a bad

one, I say, get a good lens. Do not expect for 30s. an instrument as good as at some makers you would pay £5 for. Let me not be understood as advocating these studies to the exclusion of other and more extended work—to landscape, to seascape, to figure in every phase. What I say is that in studies, taken small and enlarged, you have a class of work second to none in interest—work that, by the very care and thought you give it, will befit you for pursuing with more intelligence than you would otherwise possess, every phase of picture of which photography is capable. Some of the studies I have suggested may be considered photography made easy. I may be asked what scope does a turkey or a brace of hares give for showing the art side? I reply, the lines, the lights, the shadows may be harmonious and exhibit good taste from one arrangement, but obtrusive and exhibit bad taste in another. In naming some things here, I am, perhaps, thinking of the amateur newly fledged, and showing him how easily he can find a subject at his own door when he wants one.

I enlarge by daylight, and the cost of adapting a camera to the purpose did not exceed 3s. 6d. Nothing done to this camera prevents me using it for ordinary purposes.

I cannot forbear saying here that, apart from my advocacy of hands and feet as specially worthy every one's attention, it is to the studies attainable from the human figure generally I look for the greatest pleasure, the greatest instruction, and the easiest attainments. In coming into London a month ago, I saw a dozen good studies, as I passed in a cab up a single street. If you care for landscape only, devote yourself to it. Ascertain what Millet, Corot, Leader, C. E. Johnson, and Wyllie have done in painting, and what Emerson, Bankart, Gale, and many others are doing in photography. If you aim at attaining their height, go ahead, but spare your friends view-taking.

Do not think all required of a photographer is that when he goes for a holiday he may take views of his play-ground. He should become an amateur, that he may improve his taste, cultivate a love of the beautiful, distinguish it from the commonplace, and inoculate his children with the virus.

I think, to the amateur, there are some ruts in the photographic road. Keep in them if you like, I only point to them. A certain make of plate may be a rut; Beach's developer is a rut; photographic time-tables are an awfully deep rut; landscape only is a rut; and, yes decidedly! everlasting figure must be another.

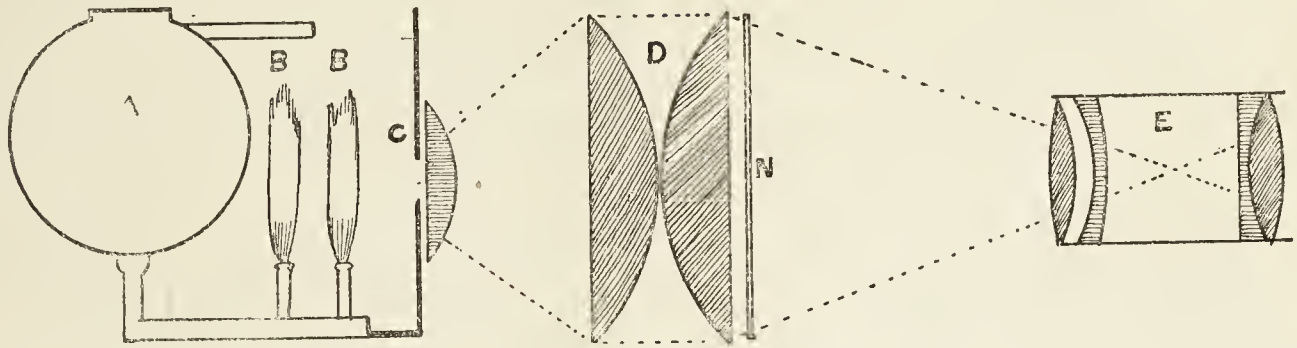
My last words are, whatever you do, however much, however little, aim with all your energy at raising photography to an art, by putting art into your own work. Without it the best technique is valueless.



## A NEW METHOD OF ENLARGING.



At the recent photographic conference at the hall of the Society of Arts, Mr. Traill Taylor, the accomplished editor of the *British Journal of Photography*, read a paper upon the above subject, which contained many points of interest to amateurs, and which led to a discussion in which some good workers took part. Mr. Taylor has been trying for the purposes of enlarging a new form of illuminant—at least, new in this particular service—namely, the albo-carbon lamp. This lamp can now be seen in many of the shop-windows, and can usually be readily distinguished from ordinary gas-lamps because of the intense whiteness of the flame which it exhibits. In its simplest form it consists of a thin, metallic vessel containing white hydro-carbon, a substance which vaporises at a temperature of about 140 Fahr. Attached to this



containing vessel is a piece of metal, which is so placed against the flame of the lamp that the heat is conducted from it to the hydro-carbon compound, which, from that time until it is exhausted, enriches the ordinary gas-flame so that it enhances its brilliancy three-fold.

The cheapest form of albo-carbon lamp costs 8s. 6d., and can be attached to any gas-fitting in a few moments. Mr. Taylor has made a slight modification by attaching a second burner, and he uses the lamp in a lantern for the purposes of enlarging. He rightly remarked that a flame of large dimensions is incompatible—in such work—with sharpness, especially at the edges of the pictures enlarged. For this reason he places in front of the burner—*i.e.*, next the condensing lenses—a diaphragm with an opening of about one inch, which cuts off the major portion of the flame, but utilises the most intense portion. The annexed diagram will make the arrangement adopted readily understood. It is taken from the drawing hastily sketched on the black-board by Mr. Taylor, at the time of the reading of his paper.—A is the containing-vessel of the lamp, which has an opening at the top, fitted with an air-tight cover. Through this opening the carbon is introduced as required—

generally once a week or so being sufficient. B B are the two flames of ordinary gas seen edgewise, enriched as already explained by the vapour of the carbon compound. C is the diaphragm fitted with a plano-convex lens of six-inch focus. D is the ordinary double lantern condenser, E is the objective, and N indicates the position of the negative to be enlarged. The arrangement is said to work well as an enlarging apparatus, and also to be useful, in showing a friend a few slides, as a magic-lantern.

In the discussion which followed, Mr. York said that he had used a large fish-globe as a condenser for enlarging. Mr. Wood, the Secretary of the Society of Arts, said that he had obtained good results without using a condenser, by placing the negative to be enlarged in the open dark slide of his camera with a sheet of tissue paper behind it, illuminated by a strong light, the ordinary camera lens serving as the objective to project the image upon any flat surface. Captain Abney mentioned

that the new Welsbach incandescent burner gave promise of being useful in such work. He had experimented with it, and found that the light contained three times as much blue as ordinary gas-light. This burner, we may mention, is an ordinary "Bunsen" fitted with a cap of muslin, which has been treated with an infusible compound of the oxides of zirconium and lanthanum. We believe that it will presently be obtainable commercially.

## SOME USEFUL ADDITIONS TO AN ORDINARY CAMERA.

BY DR. G. HERKLOTS VOS.



THE amateur who has been in possession of an ordinary *non-extra* extension camera for some time must have often wished that he were able to copy to the same size, say a carte de visite, or enlarge it; or, perhaps he wanted a picture of some small object like a flower, equal in size to or greater than it. Though he had a good lens, it was not a long focus one, and his camera would not rack out far enough for his purpose. At the same time he was not inclined



to go to the expense of purchasing new apparatus. I have been able to supply the want as regards my half-plate camera and rectilinear lens for the sum of about two shillings and sixpence! The object to be carried out is to increase the greatest possible distance between the ground-glass screen and the lens by double or more, still permitting of the use of the existing focussing arrangements. A glance at the accompanying picture of my apparatus (Fig. 1) will at once show how it is accomplished.

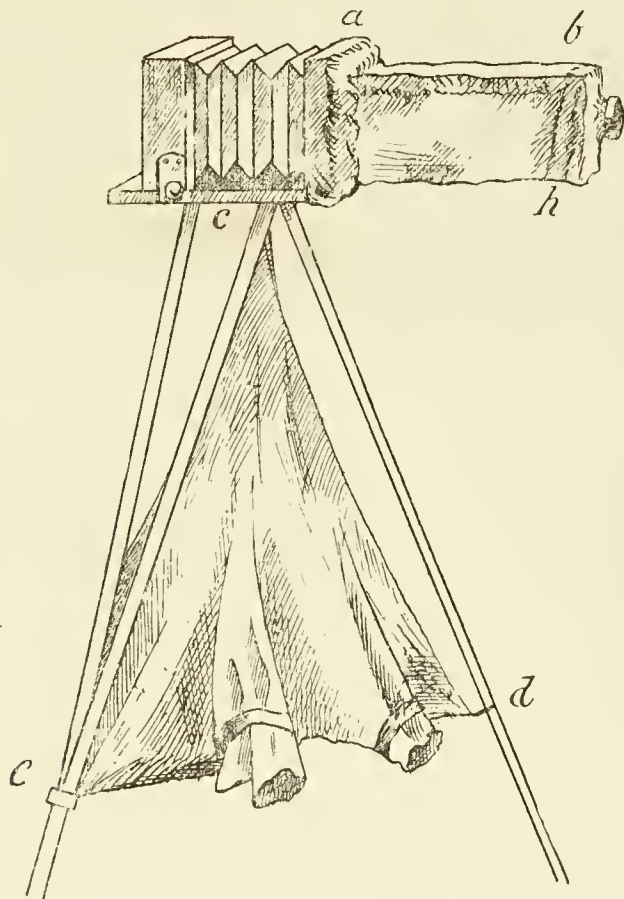


Fig. 1.

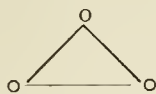
A B is a box made of thin deal, planed down to  $\frac{1}{8}$  in., and fixed together in all its parts by screws, or glue first, strengthened by screws, if preferred. The internal dimensions of it are  $\frac{1}{2}$  in. larger all round than the oblong opening of the front of the camera, after both rising fronts are removed. At the extreme end, A, of the box, and on what are the vertical sides of it when in position, and outside, are fixed two narrow slips of wood, of such size as exactly to fit into the grooves made for the rising front, and similar to those found on it, and which ordinarily retain the front in place. These strips serve to hold the box on to the end of the camera, instead of the rising fronts; and they also, with the addition of two horizontal pieces, fixed likewise on the outside of the box, serve to make the join with the camera fairly light-tight. At the end B are also fitted two narrow strips of wood, which make a groove for the existing smaller of the two movable pieces of the old camera, and

which is carried in most cameras by the larger one, together with its flange and lens. The whole is blackened inside and out with two or three coats of any dull-drying black. I find a small quantity of vegetable black, rubbed up with a solution of ordinary gum Arabic, does well for this purpose. In order to make the apparatus everywhere light-tight, black paper is gummed over the joins of the box, and, further, a bag is made of one thickness of black sateen (outside), and one thickness of Turkey red twill (inside), the two being sewn together. Into this bag the box just fits, and it can be fixed on the camera, at the ends A and B, by tin-tacks. The ends of the bag are made a few inches longer than the box, and are also made baggy here, so as to lap over the camera at end A, and held there by means of elastic round its end; and at B a similar arrangement covers the front of the old camera, which, carrying the lens, is pushed into position in the box. A hole is made at this end of the bag to admit the lens, and this hole is run round with elastic to grasp the lens tightly, and so shut out any light passing through the slot for the stops. The upper part of this last cover for the lens can be fastened down by tin-tacks at B, whilst the under side, H, and the vertical sides are not fixed, and thus the lens, carried by the front, can be slipped out and in when required. I have made my box (which is practically an extra camera stuck on to the old one, and removable at will) 12 inches long, thus giving me with my bellows a possible focal length of 20 inches. This enables me to enlarge a carte-de-visite up to half-plate, the definition with my Rapid Rectilinear lens being perfect. Of course, I stop down as much as I can, using a diaphragm of 3-16 inch when copying, and work in full sunlight. Exposure is got by a few trials. By the alteration of the centre of gravity caused by the combination some strain is thrown in the front of the camera. This could be modified by putting in a fresh socket-screw into the box-board of the camera, but near its extreme front end, by which it is fixed to the triangle-screw, which carries the legs; or the box might be made of lighter material—say, a frame-work only covered with paper. With these considerations I see no reason why the box-arrangement should not be carried out to 2 or 3 feet, if such dimensions be ever required, the cost would be little more.

My picture also shows a changing bag, suspended by a hook at C to the cross-bar of the screw that fixes the camera to the triangle for the legs—or if the camera be removed the bag may be just hooked on anyhow to the triangle. I have made my bag of three thicknesses of cloth, one (outside) of black sateen and two (inside) of Turkey-red tulle, which I find to be quite light tight, when



used in diffused light (of course) for changing plates on the brightest summer day. The bottom of the bag is of a triangular shape, thus :



and at each corner is fixed a ring. It is three-sided, and rises into an apex at C, at which point is the supporting-hook. The legs of the camera-stand are passed into the rings as at E, D (and a third corner not seen in the picture), and *before* it is hung up to the triangle. The rings cannot slip up very far because of the projecting join between the two halves of the sliding legs, and so the more the camera-legs are spread, the more is the bag kept open and stiffened. It is thus best to use the bag where the legs can be pushed fairly into the ground—grass does very well. In front are seen two sleeves with elastic round their openings to admit the arms when changing. One of the sleeves is made the larger to take the dark slide and box of dry plates, and dark box for exposed plates, &c. The bag can be pushed away anyhow into some corner in the portmanteau. Its adaptation to the camera legs is, I think, its only claim for novelty. I have not seen this arrangement figured anywhere.

## THE HUMAN EYE CONSIDERED AS A PHOTOGRAPHIC CAMERA,

WITH ESPECIAL REFERENCE TO THE RETINA,

BY DR. G. LINDSAY JOHNSON.

(Continued from page 233.)



THE reason why our vision is confined to such an extremely small area is because our mind is incapable of taking in a large number of objects at once,\* and hence it is better to have a small area perfectly defined, and to have our attention fixed on it, than to have everything in focus at once, and the mind confused with the multitude of objects presented to it. Dallmeyer remarks, in his pamphlet on "Lenses," that it is inartistic to aim at equal sharpness everywhere if you wish to produce a *picture*. For "who," says he, "ever saw the distance perfectly sharp in nature when the eye is adjusted upon some object near in the foreground?" In one sense this is perfectly true, but

\* To prove this you have only to place the eye against the end of a tube, on the further end of which a shutter is attached, and, while looking in the direction of some printed matter, let fall the shutter, which should work not more quickly than is necessary to form an image in about one-eighth of a second. Then notice how many, or rather how few, words or objects you can make out during the interval.

one must not forget that when the eye looks at distant objects they should be as sharply in focus as near objects were a moment before. The fact is, we move our eyes so rapidly, and yet so unconsciously, that although everything is so hopelessly blurred outside the narrow angle of five degrees which embraces the area of vision that even letters or figures even of large size cannot be distinguished one from another, yet, as the eye travels up and down, everything, far and near and all around, appears to be in perfect focus. I think, therefore, that for a picture to resemble nature, everything should be in focus, and yet the light and shade should be so adjusted as to bring the principal subject of the picture, on which the eye should be rivetted, into great prominence; nevertheless, as soon as it wanders around, it should not be offended by blurred and distorted shapes, but rather pleased with the endless detail which so unobtrusively surrounds the principal subject, merely serving, like the folds of a dress, to contribute to the greater beauty of the graceful wearer.

Let us now turn from considering the optical apparatus to that portion of the eye which corresponds to the sensitive film in the camera. This we have already learnt by the name of the retina, and which we can at once see for ourselves by dividing the eye of a bullock or sheep and turning out its contents. In these animals it appears as a beautiful black, satin-like layer, covered over its greater part with a brilliant bluish-green sheen. This sheen, known as the *tapetum lucidum*, does not exist in our own eyes and those of many other animals. It is clear, therefore, that it is not essential to good vision as we understand it. If now we take a pair of fine pliers and gently lift up this retina, we shall find that it is no longer black, but of a delicate pinkish mauve, should the animal have just been killed. The black colour remains behind on the bed from which we have just lifted the retina. If we touch it, we shall find it will stain our fingers like soot. Under the microscope we shall find it consists of a beautiful tessellated layer of hexagonal cells, like a honeycomb. These cells, on their retinal or inner side, are prolonged into a great number of fibres, like a brush, which pass between the rods of the retina, as we shall presently explain. I have just spoken of this layer of cells as apart from the retina, but they really form its outermost layer, but as the retina almost invariably comes away apart from the cells, leaving them attached to the choroid bed beneath, I have not, for convenience of description, considered it as such. The retina itself is a beautiful cup-shaped membrane, consisting of about ten layers, each different from its neighbour in structure, but as I am not giving an anatomical address, I will merely say that it consists of layers



of nerve fibres, which spread out from the optic nerve, ganglion cells, and nerve cells large and small, terminating in a layer of very curious appendages—the bacillary layer, or layer of rods and cones. The latter are curious club-shaped bodies, enclosing a large round cell, and ending in a narrow cone (Fig. 6, B); while, side by side, but much more numerous, are the rods. These are staff-shaped bodies, ending in a long rod, which projects a good way beyond that of the

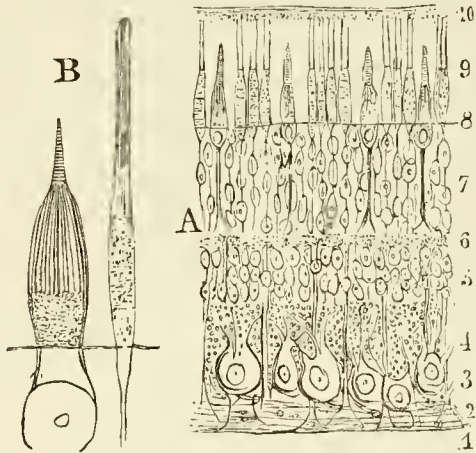


Fig. 6.—A. General view of the retina magnified about 350 diameters. B. A single rod and cone corresponding to layer No. 9 in A. From a preparation of the author's.

cones. The part of each rod which projects is clasped and surrounded on all sides by the numerous processes of protoplasm which project from the layer of hexagonal pigment-cells before mentioned. Such a formidable description would give you the idea that the retina must be very thick, but it is really, with all its layers, not thicker than a piece of note-paper, or even tissue-paper. So, to see it well, we must make very thin sections, and magnify it 400 or 800 diameters.

In every secreting organ of the body there are three main things necessary: First, a rich layer of bloodvessels to supply the material from which the secretion is manufactured; next, a basement membrane, which forms a backing for the cells; and, lastly, the layers of cells which digest the juices from the blood, and then, growing fat on this nourishment, secrete the necessary material, which in the breast gland is called milk, in the parotid gland saliva, in the liver bile, and so on. Now, in the eye we have likewise these three things:—1st, the layer of bloodvessels such as is richly furnished by the choroid; 2nd, the membrana vitrea, a thin, transparent, structureless membrane (glassy membrane); and, lastly, the layer of hexagonal cells. And what do they secrete? A curious substance, to which Boll, a learned Professor of Vienna, who discovered it, gave the name *Sehpurpur*, or visual purple. This substance possesses the singular property of becoming rapidly decomposed by

white light, just as the silver salts in the gelatine or paper films do, only in the latter case we have a reduction from a higher compared to a more simple one which is permanent, whereas in the former case the *sehpurpur*, which is bleached by the light, can rapidly be restored to its original colour again during life through the agency of the above-mentioned cells. Let me try and make this plain. If we take, say, a rabbit, and bring it into the light, and then kill it and quickly remove the eye, on separating the retina we shall find on its posterior (convex) surface a large amount of this beautiful purple\* tint, which, on exposure to daylight, in a few minutes gradually fades away, changing first to orange, then pale yellow, and lastly to white. If, however, we kill the rabbit, and then expose its eyes to the light for some time, on removing the retina we shall find it quite bleached, nor will laying it upon the lifeless pigment layer restore it at all. It is clear, therefore, that it is only during life that the retinal pigments will restore the colour, but this it does so quickly and thoroughly that it is impossible to kill an animal sufficiently quickly, after exposing it to a bright object, to find any impression of the object bleached on the retina; for, on removal, the retina shows a perfectly uniform purple tint, without the trace of any different tint. As Kühne says in his monograph: "The retina, so long as it maintains its natural connections with this epithelial layer, resembles an entire photographic laboratory rather than a photographic plate, in which the operator, by using fresh sensitive material, is continually renewing the plates, and simultaneously washing out the exposed image."† Now, Kühne made use of the above phenomena to make permanent pictures on the back of the retina of an animal, and from what we have said it is pretty clear how it is done. The animal—preferably a rabbit—is first kept some minutes in a dark room, to allow previous retinal images to be completely obliterated, and is then killed in the dark. The eyes, either removed or left in the head, are now exposed to some very bright object, such as the window-panes in the room, or a skylight, for a few seconds, the animal's eye being kept rigidly fixed in one direction. As soon as the exposure is judged sufficient, the eye is covered up, removed with scissors, divided in half with a sharp cut of a razor, and then, after turning out the vitreous jelly, is popped into a small jar filled with a 4 per cent. solution of alum for twenty-four hours. This is merely to harden the film, so that it will not tear on removal. The next

\* This purple colour is really a peculiar colour, being a mixture of purple, brown, and yellow. Kühne compares it to the colour of a chamois.

† Untersuchungen aus dem physiologischen Institute der Univ. Heidelberg. Dr. W. Kühne.



day the eye is uncovered in a yellow light (a sodium spirit flame is the best), which prevents the purple from bleaching like a sensitised photographic plate, and the retina is gently detached from its bed, to assist which it is well to punch out the optic nerve with a small cork-borer just as the retina is firmly attached around its margin.

The retina, which, if properly pulled out, resembles an acorn-cup in shape, is allowed gently to sink on to a marble under water (to keep it from shrinking up), and is then dried in a dark drying chamber, such as is used for an emulsion plate. The retina, when dry, retains its form, and the window-frame we have photographed will remain permanently, if not exposed to bright daylight, as a white object on a purple-red ground.

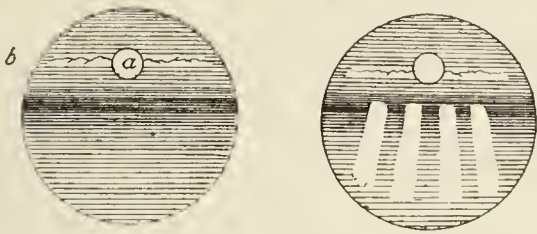


Fig. 7.—The left-hand figure represents the retina of a rabbit in its normal condition. The right-hand figure represents an optogram, or photograph, of a skylight consisting of four long panes of glass. As the skylight was dome-shaped, the panes appear to slope outwards somewhat.

This is how I propose to proceed to-night, but whether we succeed or not depends on the exposure, as it is very different in artificial light to daylight; nor will exposure-tables, so useful in photography, help us much.

(The eye of a rabbit was prepared as above, and exposed to the limelight, an object in the shape of a double cross being placed on a ground-glass background, between the condenser of the optical lantern and the rabbit's eye, for ten minutes.)

If the above facts embraced the whole theory of vision, the explanation of sight would be delightfully simple. Unfortunately, the more we know about the eye, the more complicated and obscure does the problem become. In the first place, the yellow spot which is situated in the line of most perfect vision possesses no purple at all, for, as we explained before, the purple is confined to the rods, and does not reach the cones, which are much shorter, at all. Now, at the yellow spot there are only cones, nor do the rods become numerous until you get some distance away from the yellow spot. Again, hens and pigeons have clearly good sight, and yet nothing resembling purple has been discovered in their eyes. But, even granted that the visual purple were the cause of sight, it would not explain how the two-fold sense of sight and colour could act on the cells of the great ganglia of the brain, and cause us to see form and colour.

The subject is a vast one, and full of interest to the student of nature; and, although we are only on the threshold of the problem, yet daily facts are pouring in and shedding light on the subject from sources where we should least expect it, and it is partly for this that I have introduced the subject to your notice to-night, as we look to the teachings of photography more than to any other science to find an answer to those two mighty problems, What is sight? What is perception of colour?

## PHOTOGRAPHIC EXHIBITION AT NOTTINGHAM.



WE have recently had an opportunity of visiting the exhibition of photographs now open at the Midland Counties' Art Museum at Nottingham Castle. The exhibition is a remarkably good one, and contains 350 frames—no fewer than 200 of these being contributed by amateurs. Among both the professional and amateur exhibits are some which have been already reviewed in these columns, for they were hung at the last exhibition at Pall Mall. The Autotype Company exhibit several of their well-known enlargements, and the Plantinotype process is fairly represented by both professional and amateur workers. Taking the professional workers first, we may note that the silver medal for landscape has been awarded to Mr. T. A. Green, who contributes some exquisite views of lake scenery; the bronze medal to Mr. Ralph W. Robinson, for some fine snow-scenes, one of them showing a remarkable effect of atmosphere; and certificates to Messrs. Berry and H. N. King. Mr. Leonard Blake carries off the silver medal for portraiture, the bronze one being awarded to Mr. Lafayette. In subject pictures Mr. Frank Sutcliffe takes the silver medal for his "Water Rats," which also earned him a medal at Pall Mall; the bronze going to Mr. H. P. Robinson, for "Who could have sent it?" Among the amateurs, Mr. Harry Tolley carries off the first honours, for a fine series of  $15 \times 12$  platinotypes (landscapes); the second prize falling to Mr. Clement Williams, for a good study of ferns and foxgloves. This latter gentleman also wins the silver "Amateur Photographer" medal, for his most artistic seascape, "The Last Peep of Day." "The Top-spinner," by Mr. William Adcock, has worthily won a silver medal, and the fine ploughing scene, "A Stiff Pull" (of which we gave an illustration some months ago), by Mr. Emerson, takes the bronze medal in the same class. The "Architecture" silver medal is taken by Mr. H. Manfield, and the bronze by Mr. E. Brightman. A number of exhibitors have also been honoured



by the award of certificates. The judges were Mr. Jas. T. Hart, of Nottingham; Mr. A. W. Wills, of Birmingham; and the Editor of the CAMERA.

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## Reviews.

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*The A B C of Modern (dry plate) Photography.* Published by the London Stereoscopic and Photographic Company, Limited, Cheapside and Regent-street. 21st edition.



**L**HAT a book should run through twenty large editions, and that a twenty-first should be called for by the continued demand for it, is alone a guarantee that it is a work of some merit. Originally it certainly justified its title, for it gave but the alphabet of the art of photography. But the publishers know well that the modern amateur, for whom it is written, is not a backward child that stops long over the mere grammar of photography; and to keep pace with his aspirations, the book has now been almost wholly re-written and brought up to date. It is still as serviceable to the mere beginner as it was before, and his wants are fully met in the first division of the work. The second part deals with the more advanced details of the art, and discourses in plain language, free from useless technicalities, of such subjects as photo-micrography, the production of transparencies, platinotype, gelatinobromide printing, paper negatives, &c. In a word, everything that the modern amateur photographer may wish to know about he can find explained in these chapters, and the information is not merely theoretical, but highly practical. The book is well printed by Messrs. Wyman & Sons, of Great Queen-street, W.C., is furnished with excellent wood-cuts, and with some process reproductions of amateur work. We feel certain that the 21st edition of this useful manual will not be the last.

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## Answers to Correspondents.

*This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.*

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V. B. L.—It would be impossible to give you an answer to your question in the space available in this column. Consult the text-books. In Marion's "Practical Guide to Photography" there is a chapter on photographic optics which you will find will well repay perusal.

W. ATKINSON.—1. There is no reason to doubt that both Alpha and Eastman papers will keep indefinitely, provided that ordinary precautions against damp, &c., are observed. 2. Either will do for enlargements, but why use such a troublesome thing

as magnesium, when a controllable oil-lamp will answer the purpose?

TIB.—Messrs. Piper & Carter, of Furnival-street, publish a list of works on photography. The Scientific Publishing Company, of 22, Buckingham-street, Strand, do the same. Obtain their lists, and you will get what you require.

ED. LIESEGANG (Germany).—Thank you for the paper. We will try it directly London is favoured with better weather than at present.

INDIGNANT.—It is quite possible that your picture may be one of the finest in the exhibition, although it has not gained a prize. The names of the judges are sufficient guarantee that they are quite above favouritism. And if those names were quite unknown to us we should still feel certain that they were quite uninfluenced in their decision, for fair play in such matters is universal.

HOSPES.—The lamp which you mention is not the first of its kind, for two others were shown at the Gas and Electric Light Exhibition at the Crystal Palace a few years ago, but both these required an air supply under pressure. The new one is self-contained, and, therefore, being the fittest, has a better chance—and a very good chance we consider it, too, of survival.

L. H. C.—Send the MS., and we will consider it. We could not possibly guarantee to publish the articles of an unknown writer without knowing what he can do.

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THE PHOTOGRAPHER'S CUSTOMERS; OR, THE OTHER SIDE OF THE QUESTION.—A "Photographic Artist" writes:—"It is all very well to be down on the cash-in-advance system, but this sort of thing is what happens to us:—We take a speaking likeness of a lady client. 'Dear me, Mr. Jeller Teane,' she says, 'I don't like this at all! Why, you've given me dark hair, and made me look tall and thin, and positively plain!' 'Well, madam,' we reply, 'you have dark hair, and you are like a skeleton lamp-post, and absolutely hideous—aren't you now?' 'Bless my soul!' says she; 'I don't come to you to have a likeness—I want a nice portrait. I prefer fair curly hair, and plumpness; and a fresh, oval style of beauty.' So then I patch up a negative from bits of Mary Anderson and Florence St. John, and Ellen Terry's wig and Mrs. Langtry's smile; and then the client is delighted. So, when the next client comes, we soften him down with bits of Conway and Sir Frederick Leighton; and then he roars: 'What's this? I want a likeness. Can't you see I squint? Where's my squint? Where are my moles? Pooh!' And he smashes everything in the place, and leaves." —*Fun.*

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## NOTICE.

THE CAMERA (price 6d.) is ready for issue to the public on the 1st of each month. The Publishers will feel obliged for information of any difficulty that may be experienced in obtaining the magazine regularly.



# \* THE CAMERA \*

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## Sayings and Doings.

**T**RULY "there is nothing new under the sun." Even the roller-slide, which most of us have believed to be the last new thing of importance in the way of apparatus, is by no means new. But we must confess that we did not know how really old the idea was until we lately came across an extract from the now defunct *Photographic and Fine Art Journal*, dated July, 1856, where a roller-slide is described with the help of two diagrams. This was, of course, in the days of the old Calotype process, when paper formed the basis of the negative, as it again is doing after an interval of more than thirty years.

THIS old roll-holder consisted of a flat case, containing at either end a roller covered with paper, on one of which the calotype-sheets, previously gummed together at their edges, was rolled up. The other roller acted as receiver, and both were turned round by milled-headed discs, which were outside the case. A flat board, actuated by springs, pressed the portion of the paper which was ready for exposure against a sheet of clear glass, which was placed immediately under the exposing shutter. A little window of yellow glass enabled the operator to look into the interior of the slide as he rolled up sufficient paper after exposure had taken place. Here is a pretty complete specification of a workable roll-holder, which seems, like some other notions, to have come before the world was ready for it.

"AN AMATEUR" has recently described in the columns of a contemporary a new dark-room lamp which he has contrived. It consists of two round

discs, which form the top and bottom of the lamp, and which are connected together by a spiral spring. This spring urges the two pieces apart when the lamp is in use, when it is clothed with non-actinic paper, and allows top and bottom to meet and to shut together when packed for travelling. We may point out that some years back a more simple contrivance than this was in use by a few workers, while it was much the same in its form. This was a common Chinese lantern stained with aurine, the cost of which is one penny.

+ + +

THE old subject of the best light for the dark room recently cropped up at a meeting of the New York Photographic Society, when a speaker asserted that he knew many who had been obliged to give up photography altogether on account of the effect of the ruby light on their eyes. He advocated the use of cathedral (green) glass, combined with an orange medium, and claimed the credit of this suggestion for one of his compatriots. We fancy that the suggestion originally came from Mr. Debenham, of London, but we may be wrong. But one thing the speaker proposed which is both ingenious and new. He suggested that those who suffer—as many undoubtedly do—from prolonged working in a ruby-lit room, should wear green spectacles. It was asserted that the adoption of this course gives great relief to the tired eyes.

+ + +

IT is a curious feature of this practical age that so much nonsense is talked and written upon the subject of art. Persons who cannot themselves correctly draw the outline of a haystack, consider themselves competent to criticise the works of capable artists, and armed with a dozen or two stock expressions, such as "breadth," "feeling," "*chiaro-oscuro*," &c., they walk through a picture-gallery and give bold utterance to their feeble



ideas. Is it astonishing that there are a few knights of the brush who pander to these patrons of art, and is it astonishing, too, that satire is beginning to take note of both artists and critics? We are prompted to these remarks by a delicious paragraph which we find in the pages of the *Philadelphia Photographer*. Here it is:—"An 'impressionist' sent a 'sunset' picture to the Royal Academy. He carefully indicated on the back of the frame which was the right side up; but he added, in a polite note, 'Should my work be placed on your wall upside down, please catalogue it as sunrise.'"

\* \* \*

THERE is really but little exaggeration in the above story. Many so-called pictures have been exhibited in London during the past few years which we have no hesitation in saying would not have suffered in the least from being hung upside down; for their admirers would not have detected that they were thus misplaced. One thing is very clear with regard to these artistic monstrosities. If they are right, nature must be wrong, for they resemble nothing in earth, sky, or sea. It is certain, too, that all those artists who have left their honoured names on the scroll of fame must be wrong as well, for there is nothing in common between them and these "impressionists." Photography, we need hardly add, is "not in it," and we sincerely trust that it will keep out of it.

\* \* \*

A DISCUSSION on lantern matters, recently raised at the Manchester Photographic Society on "Bottles *versus* Bags" as containers for the two gases necessary for the limelight, is of special interest in connection with an article on regulating these gases which appears in our present issue. Some of the gentlemen who joined in this discussion have certainly been fortunate in their experience of bags. For instance, Mr. C. said that "his present bags, which were in good order, had been in continual use every season for five or six years." Mr. O. said that "he had used his bags many times every year, and he had only had two bags in twenty years"! What a splendid advertisement this for their—tailors!

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MESSRS. HINTON, of Bedford-street, have sent us a copy of their book of photographic labels, which has been arranged by the Rev. F. C. Lambert. The book contains 240 labels for chemicals and solutions of all kinds which are used in the photographic art, gummed and perforated ready for use. The selection has been made with great care, the more common labels being repeated. Thus, the label "... per cent. solution" occurs more than a dozen times. Those who know the value of neatness and order in the laboratory will be glad of the convenience afforded by these labels.

## PORTRAITURE.

BY ANDREW PRINGLE.



HATEVER lot there may be for photography in the womb of futurity, it seems probable, as matters stand at present, that upon Portraiture chiefly her fate will depend. Whether it is the case or not that photographers are now beginning to feel that pure landscape work and architecture, and such views as sea-effects, are too slavish copyings of what is before them, or whether it is that there is a variety or a charm in the human form which raises it artistically higher than inanimate nature in the estimation of photographers, I cannot say; but I am very sure of the fact that, day by day, the human form is becoming more and more the object of the photographer's attention and the subject of his work. I do not think this is by any means a fact to be deplored; on the contrary, I have no doubt at all that the Creator's noblest work was Man, and I have no apprehension of ever seeing the time when "still nature" shall be *entirely* ignored, and man *alone* acknowledged as worthy the efforts of a graphic art.

It is not my intention, nor within my province, to argue on either side of the question:—Is animate or inanimate nature the nobler, the fitter for our art, or the easier of attainment by us? I have accepted as beyond doubt the proposition that daily we are devoting more and more our attention to the human body, and what I now venture with all humility to do is to draw a few lessons, to foreshadow a few dangers, to suggest a few precepts, in view of the position in which photography now stands, and in view of the position which she ought hereafter to take. For certain it is that if figure photography becomes anything like universal among photographers, upon figure-photography the art must stand or fall. Landscape photography may sink to any abyss or may rise to any height, and no one outside the photographic world be much the wiser; but portraiture is a very different affair. If it degenerate, if our portraitists sow abominations broadcast, or if they disseminate evidence of careless, thoughtless, inartistic work, our credit will most assuredly dwindle till the word "photographer" shall come to be a term of contemptuous reproach. But if our portraitists, be they professionals in gilded studios, or be they amateurs with "two-guinea sets," send out, or distribute among their friends, portraits or studies bearing the impress of thought, and, at least, a *desire* for pictorial effect, then the status of photography will be elevated, and we shall take our proper place in the world of art. I am well aware that there are some who laugh, or profess to laugh, at the application



of the word "art" to anything photographic. While I never claim for photography a place in the highest realms of art, I most certainly claim for it the possibility of attaining a high place in the kind of art that seems to be so much gaining ground in the present materialistic age. I believe that photography can come within "measurable distance" of the art displayed in very many paintings that may be seen yearly on the walls of our Exhibitions, where the exhibitors' names have frequently certain titular letters attached to them. In the matter of colour, we are, of course, "nowhere," but in conception and drawing we need not fear comparison with the works of even some "great" painters. It is a futile quibble to say that photography cannot be art because she can only portray what she has before her; the lens and the plate are no more to us than the brush and the canvas are to the painter. We claim to exercise our art in the conception and arrangement of our picture just as much as the painter does, and, if the whole truth were known, it would often be found that the painter himself portrays very little, if anything, beyond what he had at one time or other actually before him. The artistic value of a picture does not depend on the visible and tangible details so much as on the expression conveyed to the mind by the picture.

I have allowed myself to be carried into a long digression from my main point, and I must now try to recover the thread of my reasoning.

I stated my belief that figure-photography is taking daily a firmer hold of our attention, and I expressed a belief that on this branch of photography our future largely depends. No one can be blind to the increase in number, and still more in merit, of figure-subjects on our Exhibition walls during the last four or five years. Mr. H. P. Robinson and one or two others have for a long time been conspicuous in this department, but it was not till lately that these gentlemen were joined by a section of both professionals and amateurs who have become famous for their figure-studies, either in pure portraiture, as that of Messrs. Lafayette and Mendelssohn, or in *genre* subjects, such as those of Dr. Emerson and Messrs. Adcock, Gale, Slingsby, and several others. Of amateurs who can choose their own class of work there are, I fancy, very few nowadays who do not try frequently to produce figure-studies, and I mean "studies" in contradistinction to the "fore-and-aft" portraits which, I suppose, all amateurs have tried at some time or other. At our exhibitions it is now a very rare thing for an award to go to any print that has not more or less of the figure-element in it. This I believe to be a grave error when carried too far, but it is none the less a "sign of the times." And I take it to be another sign of the times that a professional photographer should read

at a photographic meeting a paper on the subject of portraiture—a paper so well considered, so discriminating, and so pregnant with meaning that it formed the text for a leading article in a public newspaper enjoying one of the largest and most respectable circulations in the kingdom.

This paper, read by Mr. Crooke at the Edinburgh Photographic Society's meeting on the 2nd inst., is now before me, and, I must add, is the cause of my writing the present discourse. The paper does not profess to disclose any secrets, nor to give any new or surprising directions. It merely initiates us into some of the ways of a man in the habit of taking portraits in the ordinary run of business. But in the words we detect thought; we are told the difficulties that present themselves, and we gain in brief outline the methods by which one thinking man, at least, tries to overcome his difficulties. I cannot follow Mr. Crooke into the little details of studio experience and practice which he cites. All I can do, and all I attempt, is to hazard a few general observations on portrait photography as it is, as it ought to be, and as we hope ere long to see it. 4

If we ask to see the photographic portrait-gallery of a friend, it is pretty certain than an album will be handed to us. There may perchance be on the table a "panel" or an "imperial," or even on the wall a 23 × 17 enlargement. But the body of the portrait collection will be in an album—"cartes" and "cabinets." Thank Heaven! the "cartes," at least, are dying out, and even the "cabinets" are on the wane. These small sizes and their cheapness have done fatal injury to photography. A "carte" is such a small affair and costs so little, that it is no great matter whether it is a picture or not, so long as it is "something like." So people run in a long stream through the studio, pausing a moment in front of a lens, and in a day or two twelve little abominations arrive by post, an order for so many shillings is sent, and twelve friends damp thirty-six fingers and run each a "carte" into an album, and there you remain, a vacuous, staring, putty-faced image, till you die of measles, or some fresher and more favoured "carte" is insinuated on the top of you. If you are a "cabinet," your fate is much the same; only, as you cost about twice as much, you are a little more putty-faced, and you have a little more room to yourself; you may even be put behind a little gilt grating, and only allowed to peep out if you are very rich, or very great, or very pretty, when there is "company."

These "cartes" and "cabinets" cost so little that people do not care whether they are pictures or not; and the photographer whips sitters past the lens as fast as he can, as if he were a dispensary doctor drawing teeth. This is not the photographer's fault—at least, not entirely—but it is a



great injury to photography, and it will kill photography in time, if allowed to go on. If we could only persuade upper-class sitters to take one good large portrait in place of, if not besides, a dozen cabinets, the sitters would feel the greater importance of the event, and would rise to the occasion; the result would, in many cases, be not only a photographic "likeness," but a picture and a prize.

Diminutive size is not *per se* a fault in a photograph, any more than in a man, the objection to the small size of "cartes" and "cabinets" being, indirectly, that they lead to hurried and "scamped" work. A far greater fault than that of smallness remains to be noticed in the album. Every portrait, it will be noticed, has been taken of the sitter squatted on a chair, looking, in every case, towards the lens, or in a direction near the lens. They may be three-quarter face (this is the most frequent phase), or, in a very few cases, they are profiles more or less complete. If the figure is included entire in the portrait, the odds are it is either a man with his arms crossed in a defiant manner, or a lady with something very "special" in the way of a dress. But there is a dismal want of variety about the poses; none of the sitters are looking either up or down, but always straight in front of them, unless by chance the head is turned one way and the eyes another—an extraordinary "effect" much affected by some portraitists. Why all this monotony, I would ask? Is the human body made of square joints, so that it can only be twitched up into two or three positions? I fear that is not the solution. The reply is simply, the photographer has not time to try any new positions, and the public want "likenesses," and not pictures. And so long as we go on taking portraits at the rate of so many dozens a day, so long will our work be degraded into a mere mechanism, and it is better that it should be called mechanism than that we should have the impudence to call it art.

But mark how the scene is changed when the portrait is wanted, not as a "likeness" to give to friends, but as a picture to sell to the public on its own merits. Plenty of trouble is taken when a professional beauty, a famous actress, a celebrated man, or a man of high station is to be photographed. There is no "three-quarter face" work now. The operator puts forth every effort to secure variety, grace, expression; and how well he does it sometimes! I believe that in beauty of pose some photographs equal any paintings ever produced; sometimes in the attempt to gain effect the pose is made simply ludicrous; but the *intention* is there, while it is absent from the routine portraiture of the day, such as we see in our albums. What I wish to see in the photographer's routine-work is more variety of pose, of

lighting, and of expression. Where—except in a shop-window—do we ever see any attempt at expression at all? Where in any album do we find a smile, a coy glance, a look of thought, or, indeed, anything except a stolid gaze or an uneasy smirk? Do portraitists suppose that their clients would not like this expressive sort of portrait? I am sure they would, and the best proof of it is the popularity of those photographers who best succeed in this style of work—I avoid mentioning names. Over and above the pecuniary success of these artists, they have a far higher reward in the knowledge that they are elevating their profession. I know several amateurs, some who are lucky enough to have studios, some who are earnest enough to struggle without them, who are now bidding fair to beat portraitists in their own field—not, perhaps, in the technique of the trade, but in the higher level of the art. Another "sign of the times."

(*To be continued.*)

## INSTANTANEOUS PICTURES.

BY JOSEPH HARRIS.



THE best photographer is he who best observes nature, and the best observer of nature will assuredly hesitate to draw the line at inanimate nature. If a man be an artist, it is in human nature that he will most delight to study; he will revel in the portrayal of the little foibles and the great weaknesses, the countless agglomerations of pride, vain glory, and hypocrisy which collectively and individually characterise that great "bundle of habits"—man! And what an imitative individual is this same man—even a photographic man! Does he require instantaneous pictures, his mind instinctively reverts to the express train at full speed, to the surging traffic of a London street, to the muddy Thames which "the penny steamers ride on," to a boat race, or the Lord Mayor's Show in a fog.

But the photographing of these objects is not art. There is an absence of composition about them. The street architecture may be fairly defined, and the traffic may be "sharp;" yet the photograph is simply the delineation of a crowded thoroughfare. *It wants character.* And the spectator, as a consequence, asks, why was it taken?

Now, the photographer in search of the picturesque, he who has brain enough to discern character when he comes across it, need not trouble himself for subject; it is at his elbow all hours of the day. All this subject asks at the hands of the artist is appreciation and recognition.

A recent paper was devoted to Canterbury



Cathedral. The grand old fane has been photographed even in flames ; and is there nothing left to immortalise—nothing more to take when Canterbury Fair is on ?

What ? *Infra dig.* ! Afraid of being seen ! Out upon you for an arrant counterfeit Bohemian, unworthy to claim the strong right hand of fellowship ! There is no time in this life to dream, to dawdle through existence with the eyes shut. Here are the main streets of the city alive with humanity, some of it philosophic, some not. Hodge, in his gorgeous new suit and beflowered buttonhole ; Hodge's young woman, arrayed in all her glory, and basking in the smiles so plentifully bestowed upon her by her admiring partner. Here are the old waggoners, who only visit the Fair to see how the young folks disport themselves ; military men, militiamen, hop-pickers, youths, maidens, old women, and children ; and each jostling the other for the post of vantage at every shop-window in the city. Is there nothing to photograph ?

The shopkeepers are duly alive to business. All the cheapest and the showiest wares have for weeks past been gathered in their stores, and so displayed that they may best tempt the hard-earned shillings out of those wonderful bags tied up with red tape, and which do duty for purses with the English hind.

"The greatest study of mankind is man." Thus wrote the satirist. And the greatest number of items of this same mankind is perforce at the fair, where ginger-bread nuts and cocoanuts, Spanish nuts, and Brazil nuts, are all heaped in baskets and disposed upon the ground, as though the very cobble-stones of the cattle-market grew nuts at fair time for the special purpose of being devoured by struggling humanity out for a holiday. There are the sweets—those wonderfully and fearfully made lengths of coloured sugar, or something else, and bent in the form of a crook, out of compliment to the episcopal atmosphere of the city whose bishop draws his thousands a year, yet sends round the hat periodically for money for a new organ. Of such is human nature. Then we have the travelling theatrical booths, which seem to invite patronage on the principle of most noise for the most money, the steam merry-go-rounds, the shooting-galleries, the cheap-Jacks, and—the photographic studios.

These marvellous erections appear to be constructed out of the relics of the household bed-linen, supplemented by a few poles and cords so as to secure privacy to the sitter while engaged in the lugubrious attempt at keeping perfectly still in obedience to the behest of the itinerant operator. "Lumber up, Sarah, lumber up ; the pair on ye for a shilling !" And Sarah did as they bade her, and "lumbered up" accordingly. Johnnie is not so readily beguiled by the voice of the charmer in

the person of a photographer's tout. He declines to "lumber up," and rejoins that he is the fortunate possessor of a bucket and a mop, and by aid of those domestic appliances he is capable of drawing his "pictur" any day. He cannot be gainsaid, for greater results have often accrued from far less auspicious beginnings.

The crowd thickens ; a noisy, thirsty, hungry, bucolic crowd. The odour is essentially that which in tobacco would be termed full flavoured. It is too dense—not the odour, but the crowd—to do photographic work. Fortunately, a bye-street is at hand, with a real old-fashioned beershop at the corner thereof. From one of the back windows of this house, a close and excellent view of the fair and of an adjoining yard is obtained. Here another of the peripatetic photographers has pitched his tent, while a gentleman "in the black" warbles the pathetic ballad entitled "A day's march nearer home." This photographer's tent was, in its original entirety, a child's perambulator ; a box has been built upon the carriage, converting the whole into a dark chamber for the "wet process." A quarter-plate camera, in a chronic state of dilapidation, a dirty and a battered lens without a name, a tripod with the rickets, and a piece of dingy calico for a head cloth, complete the outfit. The artist himself is worth a "shot" from our window, as, with a faded tin-type in hand, he solicits custom from the passers by. He is not *very* short—still he *is* short, as short men go. In his original and pristine condition, when a young and innocent boy, he might have possessed a complexion—it might have been a fair one ; at this stage of his existence it would be extremely hazardous to express an opinion, owing to the accumulation of colour or tone which somewhat darkens his visage. But this colour serves good purpose, as, owing to its pronounced condition, it serves to draw attention from an extraordinary cast in his left eye. There is no evil without a corresponding good, and this evil, or cast in the eye, has its advantage : when one optic is engaged in focussing a sitter, the other mounts watch and guard over the dark box, so inhibiting the small boys from mixing the contents of the bottles therein, in that playful mood habitual to the young of the male sex.

A customer approaches—"A specimen of that peasantry, that country's pride, which once destroyed can never be supplied." Words by the poet Cowper. The peasantry is ungainly in appearance, gone somewhat in the region of the knee, but the hat is orthodox—a black, soft felt, quite ecclesiastical in tone and cut. The coat is of the type known as "monkey," and, of course, there is an exuberant floral display in the button-hole. The garment is worn open to set off one of those rural English waistcoats which close up to the chin by



means of an infinity of white buttons. The bold peasant is conducted to a brick wall, against which he stands like a soldier at attention, palms of the hands strictly to the front, and his gaze straight to the lens. Draw a pencil-line vertically through the centre of the portrait, and both sides are beautifully alike as two peas in a pod. He desires a full-length picture, and justly so, for as the interest of his betters is fixed on the display of various articles of jewellery which have caused much anxiety to obtain, so the conceit of the peasant descends to that pair of solid constructions to which he gives the name of boots. Compared with the production of a fashionable Crispin they are as an old three-decker to a racing-shell. But these boots represent the result of so much toil, they have been the object of watchful solicitude from the hours when they were first observed underneath the green bacon, the soap and cheese, the tea, coffee, and onions, bread, butter, haberdashery, and tobacco which form a portion of the stock-in-trade of a village general store. They have been put by till paid for by hebdomadal payment, and their possessor would naturally value a portrait of the boots equally with a portrait of his face.

The artist bends the knee under the tripod, stretching his other leg well to the rear, so as to keep his body fairly erect while engaged in the critical operation of focussing. Now is the time for a shot at the comic element in life, and seen to such perfection that a Wilkie or a Kidd would have revelled in the pourtrayal.

"What! can't see yerself? Got no head? Corse yer aint; 'taint dry yet. Put it in yer pocket, out of the light, and wait till to-morrow, it'll come out beautiful then."

A swain and his lassie test the covering capacity of the lens appertaining to the knight of the transformed perambulator. There is no attempt at grouping. Why should there be? Others in far higher social station than the itinerant graciously suffer their groups to *pose themselves*—why not follow such illustrious examples? This group poses itself *naturally*—they always do if suffered to be let alone. The girl sits on the young man's knee her one hand affectionately disposed around his neck; or they will stand, side by side, full front to the camera, the gentleman tenderly supporting the damsel around the waist. And, single figures or groups, the posing is identical throughout the day, everybody standing bolt upright and staring at the instrument. Granted there may exist a slight similarity in the pictures, *when they are visible*, the itinerant is not the only "photographic artist" whose productions display a samely appearance. From some of the best-appointed studios is constantly issued a remarkably telling and original pose, everybody standing

by a chair, and putting one hand upon it to prevent it from running away.

In photographing instantaneous pictures, go for the bits of character out of that store-house of material which exists around us if we keep our eyes open to observe them. Avoid crowds and masses of people; select some of the component parts, and relieve us from the railway-hotel, the parish-church, the board-school, and the village horse-trough.

Use a rapid doublet lens or one of the Steinheil antiplanatics.

## ENLARGING ON BROMIDE PAPER.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York, Feb. 8, 1887.]



O the amateur there are, perhaps, no two branches of photography more attractive and interesting during our winter evenings than the making of lantern-slides on dry plates or enlarging on bromide paper.

Now that we have a paper supplied of a uniform sensitiveness and well coated, the making of enlargements, after a few trials, may be reduced to a certainty, and is as easy to accomplish as the development of a dry plate.

With the introduction of the paper, special apparatus has been invented for more conveniently working it, but tools of the simplest description can be employed if one only has the inclination to prepare them, so that an outfit to make enlargements need not necessarily be expensive.

Some two or three years ago I exhibited a model of an apparatus adapted to use an ordinary camera reversed for enlarging. In the place of the ground glass was located the negative, which was illuminated by the light from a "Mohring" kerosene lamp burner. A ground glass was interposed between the negative and lamp to evenly diffuse the light. A tall chimney was provided to promote a good draught. The screen was located a short distance away, and was arranged so that the image could be thrown on a ground glass for focussing, then, by rotating the pivoted board, the sensitive paper was secured in the proper place ready for the enlargement.

I have set up this model to-night that you may see the general arrangement. When the lights are lowered you may see the operation of the apparatus to better advantage; and I should further remark that enlarging by this plan, though one of the simplest that may be devised, is, at the same time, the slowest, since the light is greatly retarded by the ground glass behind the negative. With a negative of moderate density, an exposure of from twenty to twenty-five minutes is required.



If, in place of the ground glass, we substitute a double condenser of sufficient size to fully cover the negative, we would increase the brilliancy of the image to such an extent as to be able to reduce the exposures nearly three-fourths. Hence special enlarging apparatus is now furnished by manufacturers, wherein all the essentials in the shape of condensers, lamps, reflectors, and devices for adjusting the plate in relation to the lens and condensers, are fixed for the convenience of the operator, and with which an exposure of but a few seconds only is needed. I have arranged the society's optical lantern for making the enlargement this evening, using the lime-light, in order that we may save a little time and show the picture up more brilliantly. The negative, made on a collodion emulsion-plate, is placed reversed and film-side toward the lens, in the lantern-slide carrier attached to the back of the camera bellows, the space between the latter and the condensers being covered by a focussing-cloth to shut out the light. A Ross  $6 \times 5$  rapid symmetrical lens stopped to  $f/16$  is attached to the front. About six feet away is an Eastman enlarging easel, on the white paper of which the image is focussed. The relative size of the image varies according to distance of the lens from the negative, and the distance of the focussing-screen from the lens. The screen, you observe, is adapted to hold a box on top, containing a roll of sensitive paper. When you are ready to make the exposure, you simply cover the lens with a cap holding a non-actinic glass, open the hinged clamping-frame, then lift the cover of the supply-box and draw down the sensitive paper in position over the face of the screen, then clamp it by closing the hinged frame; you thus hold the paper smoothly in place without the bother of using pins.

After exposure, the sensitive sheet is cut from the roll and laid aside for development.

You thus see the process of arranging for the exposure is very simple.

It is better to hit the exposure very nearly correct, and then work with a moderately strong normal developer, rather than try and suit the developer to the exposure.

This is easily ascertained by taking small strips of bromide paper and making two or three separate trial exposures on them, observing that which develops with the most brilliant blacks and best contrast.

You can then duplicate that exposure on a full sheet and be very certain of securing satisfactory results. A point in exposing should not be overlooked, and that is, that it is very easy to obtain an enlargement from a negative having vigorous contrasts, which will be quite harmonious as a whole, by simply manipulating a straw-board, having a small aperture cut in it, between the lens

and screen. We first give an exposure suitable to bring out the details in the shadow or transparent portions of the negative, then we interpose the straw-board sheet between the lens and screen, and cut off the light entirely from the sensitive paper, except that portion which passes through the aperture. By moving the straw-board laterally with the hand, we transfer the bright disk of light to any part of the picture we desire. Hence, if we want to give a greater exposure to the dense portions of the negative, we simply guide the light to the corresponding portions of the picture on the screen, and thus obtain a uniform exposure.

In making the exposure at this time, I shall manipulate with a sheet of straw-board and illustrate the mode of working, as we have a negative of great contrast. Upon development, the detail in the white portions of the picture will appear equally as quick as that in the shadows, giving a very pleasing and satisfactory effect.

The usual ferrous oxalate developer is preferable for the development of enlargements, for the reason that blacker tones are obtained and the whites kept clearer.

It is very important that the respective solutions of oxalate of potash and sulphate of iron be thoroughly saturated. Boiling or very warm water should be used for dissolving the salts. The potash solution should be made slightly acid with sulphuric acid, which is determined when blue litmus paper dipped in the solution turns slightly red.

In developing, general practice has proved that it is safer to commence with an old ferrous oxalate solution until a trace of the picture appears, then pour off and cover the picture with a fresh developer, made as follows:—

Oxalate of potash solution	...	6	ounces
Sulphate of iron solution	.....	$\frac{1}{2}$	ounce
Bromide of potassium (50 grains to the ounce)	...	$\frac{1}{2}$	dram

which gives better control over the development. If under-exposed, the iron may be increased one ounce, making  $1\frac{1}{2}$  ounces to 6 of oxalate. The iron should always be poured into the oxalate.

In order to avoid any after yellow tinge to the whites, it is recommended that as soon as the developer is drained from the print, the latter be immediately flowed over with a weak solution of acetic acid and water (1 dram of acid to 16 ounces of water); then it is washed and fixed face downwards in a fresh solution of hypo, 1 part of hypo to 8 of water, which usually takes from ten to five minutes.

The print should be moved about occasionally while in the hypo.

After fixing, washing in a tank of changing water for two hours is necessary to thoroughly eliminate the hypo.

One of the chief items of expense in making



large-sized enlargements is suitable trays; these, however, can now be easily and quickly made.

Any carpenter can make wooden trays the size wanted, with low sides, in which heavy rubber gossamer cloth, such as is used for water-proof goods, is fitted and tacked to the upper inside edges.

## IN THE PYRENEES COUNTRY.

BY A LAZY AMATEUR.

"**I**N case you should want them, sir," said the steward, as he proceeded to serve out basins all round. And soon after that we had a good time. Of course, everybody had advised us not to go. "If I

were you, my dear boy," said one, "I should think about it—I should think about it. It's a long way, an expensive journey into a strange country, and without a companion. And what do you gain by it? No, my dear fellow, it isn't worth it." We did not think about it, and with the usual result—we recollected that we wanted to see a man at San Sebastian about a gun, and went.

We may, perhaps, be allowed to observe that we have never yet made up our mind to do *anything*, without everybody giving us gratuitous and unasked advice to the contrary, and it is hardly necessary to add that offence is always taken if the advice in question is refused.

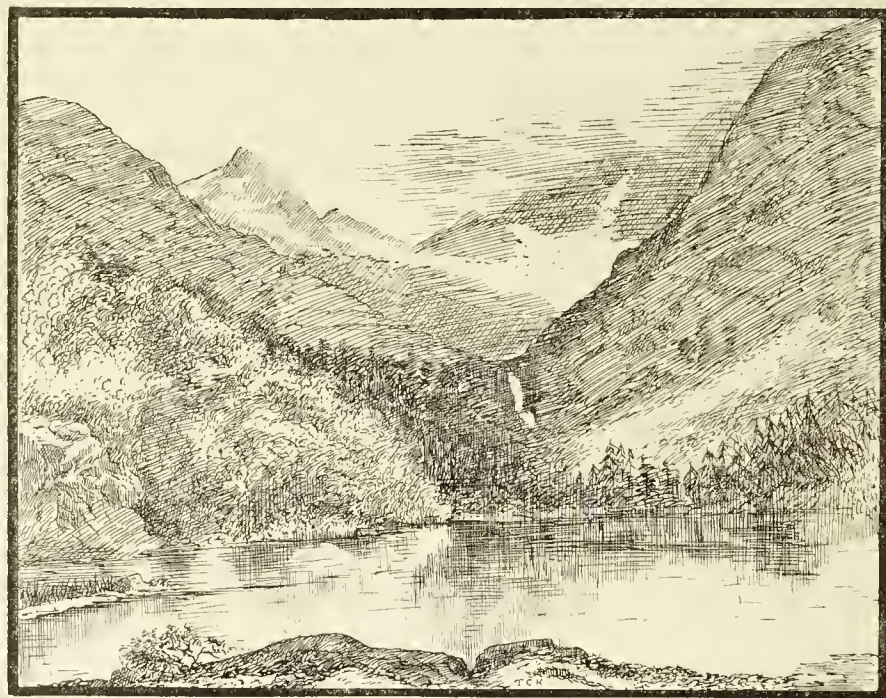
From London to Bordeaux by "General Steam" was the first idea, and thence to follow the dictates of our own sweet will; so, having an alarming propensity for spending every shilling about us, and leaving ourself destitute, we proceeded to pay our passage and "provision money" there and back. We found it a very good plan, and recommend it accordingly. The prospect of four days of uninterrupted laziness was a great attraction; so, after quelling the customary "mutiny at the Nore," we settled down to enjoy

things, and having hauled out the books we had brought for the purpose, didn't read them. Beyond this, we occupied ourselves mostly with reclining at full length under an awning, and looking forward to meal-times, occasionally varying the monotony by making leisurely circular tours of the vessel, lasting, say, two hours, and putting irresponsible questions to the captain. It goes without saying that we had one or two gentlemen on board who suffered from a wild idea that they were assisting to navigate the vessel, by walking about with telescopes and maps all day, and by getting surprisingly mixed up with the cordage, &c., on deck at midnight or phenomenally early in the morning. The coming on board somewhere in the Bay of Biscay of a terrific ruffian in baggy breeches and a glazed hat, was the occasion of one of these gentlemen remarking to us in a confidential

undertone that he "didn't see what we wanted a pilot for," adding that he should have thought that our captain could have done as well as any pilot. We acquiesced, of course, and subsequently went in parties to inspect the phenomenon in question.

By the way, while we are getting to Bordeaux, a word or two about our apparatus may not be out of place. We used, once upon a time to lug

round a  $7\frac{1}{4}$  by  $4\frac{1}{2}$  outfit, but we have had enough of that, and have come down to  $\frac{1}{4}$  plates and comfort. Our camera now—constructed by a dear friend of ours—is a very light, home-made affair, the dark slides being made of a kind of paper used by printers, and known as "glazed-board." They are just thick enough to hold one plate each, and a dozen of them will go into our overcoat pocket. In point of fact, they did go in on several occasions when crossing frontiers, &c.—a little arrangement which saved much inconvenient questioning. The lens is a  $7\frac{1}{4}$  by  $4\frac{1}{2}$  Ross' Rapid Symmetrical, which, of course, gives with  $\frac{1}{4}$  plates a very narrow angle—a distinct advantage artistically, and the whole, with the tripod head and cloth, packs into a common schoolboy's satchel. Portability of outfit is a *sine qua non*



Lake de Gaube.



while travelling for pleasure. A sheet of ruby paper, stuck up round our bedroom candle, at one end of the room, while with our back to the light we changed the plates at the other, answered perfectly, and some numbered squares of stamp-edging, one of which was attached to the back of each plate as it was removed from the slide, enabled us, in conjunction with our note-book, to identify the plates on arriving home.

So much for the photographic part. Plenty of warm wraps and rugs are indispensable if you want to enjoy sitting on deck in the evening. Before starting southwards, pack them up, and everything else you can spare, and leave them with the landlord of your hotel at Bordeaux, to be called for on your return. For the rest, we can only say, don't have more than one bag if you can help it, and take a couple of

white flannel boating-shirts *with collars*, a pair of slippers, a muffler, and a soft hat. We have many a time gloated over the miseries of our fellow-travellers in stiff collars, boots, &c. *Verb. sap.* On arrival at Bordeaux, someone seized our Gladstone, and walked off with it into a shed; we pursued, and recovered it, but in the instant that had elapsed somebody had drawn something



Pierrefitte.

on it with white chalk. After hunting about for some time for a custom-house officer, we espied this work of art, and so discovered that the formalities were already completed, the key having been in our pocket all the time, and no questions having been asked. So we went. A preliminary stroll the next morning convinced us that the town was much too fine for the sort of photography we love to practise, so, throughout the day, which was spent mostly in "doing" the place with a horse and trap, we debated the question—"What next?" A visit to the railway office during the evening soon settled it. We were shown a "Circular ticket to the Pyrenees," embracing every place of interest and beauty on the French side, with power to stop anywhere *en route* (first-class, 75 francs—£3), and purchased one at once; also a "Livret-

Chaix" time-table, *which saved us endless trouble and worry*, at the cost of fourpence. Thanks to this little book, we never once, while in France, had to ask anybody about the trains, and could lay our plans for days in advance with perfect ease; and to those who, like ourselves, possess only an imperfect knowledge of French, this is no inconsiderable matter. Asking questions is easy enough, but understanding the volley of information which is always accorded with the most perfect politeness, is different. Apart from its usefulness, it is entertaining to study in its pages the astounding ingenuity with which all trains not "first-class only" are made to start and arrive everywhere at the most absolutely inconvenient hours. A train leaves Bordeaux for the south at midnight; by this we decided to go, and spent the remainder of the

evening, after dinner, in listening to the band in the square.

On our tickets were some instructions to the effect that before starting they were to be delivered to some functionary at the station to be stamped. Not quite gathering who might be meant, we applied to a military gentleman, who happened to be lounging about there, for information; and he, at considerable trouble, went and consulted four

or five others at a distance. Ultimately, he explained that we must go to the booking-office, and, in order that there might be no mistake, accompanied us thither, and, having placed us at the end of a tail of passengers in waiting, bowed, raised his hat, and retired. We, of course, returned the salute, with thanks, and waited. (We may observe, in parenthesis, that in France it just takes two and a-quarter minutes of gesticulation before a ticket can be purchased. We had ample leisure to observe this, in the fifteen cases in front of us, and as the time for starting drew on it became very interesting indeed.) But, to return, we do not think that many people in this country would have shown so much politeness to a foreigner in difficulties, and the trifling circumstances that the information was entirely erro-



neous, and that his instructions turned out to be utterly wrong, do not detract from the merits of the case. Information acquired by experience being valuable, we may say, for the guidance of others, that the functionary in question stands in the passages leading to the platforms, and corresponds simply to the ticket examiner here. We climb, literally, into a carriage, for the platforms are level with the rails, and sit down to enjoy the proper amount of shouting and whistling, starting a train in France being no light matter, and then, with a terrific blast upon a penny trumpet, which makes the blood run cold for a moment, we are off. The chance of a glimpse of Spain was tempting, so we did not leave the train at Bayonne, the last station that way, covered by our ticket. Biarritz, however, was considered worth an hour or two in passing; so we descended there, and, leaving our luggage at the office, proceeded to reconnoitre. This facility, at every station, for leaving the luggage is exceedingly valuable, as it enables you to decide at leisure whether the place is worth stopping at, and to select your hotel—in fact, leaves you entirely unfettered. Biarritz, photographically speaking—from our own particular point of view, of course—may be summed up in a few words. The bullock-waggons and the donkeys are splendid; but the town is too “spick and span” to be much good. Tree and foliage studies are easily obtainable, though they are not in any way characteristic; but the road from the station is an excellent place for securing the donkeys, &c., and they are well worth some plates. They look ridiculously small, one could jump over them, but they carry a couple of paniers nearly as big as themselves, and the old lady who owns them on the top, the whole forming a picturesque group; the bullocks, too, are beautiful, and not overworked, apparently, for things are taken quietly here. For instance, if the procession is not proceeding rapidly enough to please the gentleman in charge, who walks in front, he gets a few paces ahead, and, turning round, points with a long wand which he carries for the purpose, at the heads of the animals, and makes a few remarks in a tone of gentle remonstrance—nothing more; it produces no particular effect upon the bullocks, and it relieves the gentleman’s feelings. We had been told that from the moment of crossing the frontier into Spain we should encounter surprising difficulties in carrying on a conversation, and we found it only too true. Our stock of French was no good at all, nor was English, so we passed three days in silence. Knowing the Custom-house examination at Irun to be a very searching one, we stowed our plates away in our pockets, as we could not have prevented their being opened

otherwise; the contents of our “Gladstone” being turned over and examined minutely, though with perfect politeness, by one of the officials, who all wear spotless white gloves for the purpose. Our mackintosh, however, which was new, cost us both an anxious five minutes, the officer seeming quite at a loss whether to make us pay or not. Our innocent appearance ultimately prevailed, and we were allowed to depart, unharmed. (Mem.—While at Irun, get some Spanish money, and similarly, in returning, get rid of it. There is an office at hand, and French money will not pass in Spain; also, if it happens to be meal-time, get some food while the train waits for the purpose. Our “Livret-Chaix” was good for France only, and being utterly unable to make anybody understand, we could not discover the time of starting, and so were afraid to leave the train. After half an hour or so, a French gentleman was appealed to with success, but then only a few minutes remained, and on finding the buffet, behold, the meal was over. Coming back we were more wary. The Spanish train runs to Hendaye, on the French side, and there, going with the crowd, we enjoyed an excellent little déjeuner.)

At San Sebastian station it is not possible, apparently, to leave your luggage, so the hotel you get to depends entirely upon which omnibus-conductor captures you as you emerge. Had there not been at table d’hôte that evening a kindly-disposed English gentleman, who spoke German, and a waiter who spoke German and Spanish, our questions about that gun would have remained for ever unpropounded. By enlisting the services of both, however, the matter became comparatively simple, but when our new-found friend left next morning we felt abroad, indeed.

There was no resource, then, but the British Vice-Consulate, and there we had to carry every trouble. The Vice-Consul, himself an enthusiastic amateur photographer, was so good as to offer us the use of his dark-room, and I would like here to take the opportunity of expressing my obligations to the two MM. de Brunet, and to thank them for the unfailing courtesy and patience with which they helped me along. San Sebastian is far from being the best place on our route for picture-making; but the sea-bathing is grand, and the place is full of amusing novelties to the foreigner. Blotting-paper appears to be a rarity—we are speaking, of course, from our own very limited survey—and gentlemen dispense with its use by the simple expedient of sprinkling on to the writing, a little of the mortar from the nearest wall, which they chip out and pulverise for the purpose. Over what we in England call Italian warehouses, they write up “*Ultramarinos*,” and the appearances of some of the delicacies within suggest the reflec-



tion that if you were to eat them you would probably look very blue indeed.

There are some lovely old houses at Pasajes, an easy walk from San Sebastian, completely weather-stained, and well worth a shot or two. You can only get about in boats; but don't get dissatisfied with the pace at which you are rowed. Any attempt to "run the show" yourself will only end in bitterness of spirit, and it makes you look ridiculous. We speak from experience, having had an idea before starting that we knew how to manage a boat; that is all over now. In San Sebastian we had the good fortune to see some lightning of indescribable magnificence, and which alone would have been worth the journey there, though, judging from the little notice taken of it, such phenomena would appear to be by no means unusual. Twice during the three hours the display lasted we timed the flashes, counting four in every minute, and their radiance far surpassed any that we had ever seen before. Speaking of timing reminds us of another trouble we underwent here. In the square is a four-faced clock, showing San Sebastian time, Madrid time, Paris time, and London time, and, as all trains in Spain go by Madrid time, and all in France by Paris time, things on the frontier are apt to be confusing. Therefore, before leaving, we carefully put back our watch several minutes—we forget now how many—to bring it from San Sebastian to Madrid time, then, changing trains at the frontier, it had to go on twenty-five minutes to make it Paris time, and then, on arrival at Pau in the evening, back again some minutes to make it agree with the local clocks. It hasn't recovered yet. From Pau there is one general view of the Pyrenees of enchanting and probably unsurpassable beauty, but it is a beauty that the camera cannot reproduce, though seen as we saw it, in all the glory of the setting sun, it will remain in the mind for a lifetime. Stop at Pau, by all means, but reserve your plates and feast your eyes—your ears, too, if you like, for here, as in every place we stayed, there was always good music to be heard in the public square, a really brilliant arrangement of "La Marseillaise," in the style of the overture to "Tannhäuser" being received with immense applause. Truly, the sight of thousands of people sitting, night after night, quietly listening and enjoying themselves, makes one conscious of the fact that we in England have much to learn in the art of keeping folks out of mischief.

Pierrefitte-Nestalas was our next station, and thence we drove (conveyances being in waiting) to Cauterets; but long before that drive was over we had decided to abandon the remaining places on our route and to stop there for the remainder of our time, in spite of a feeling of ludicrous

despair at the idea of ever being able to do anything in such scenery with our limited stock of plates.

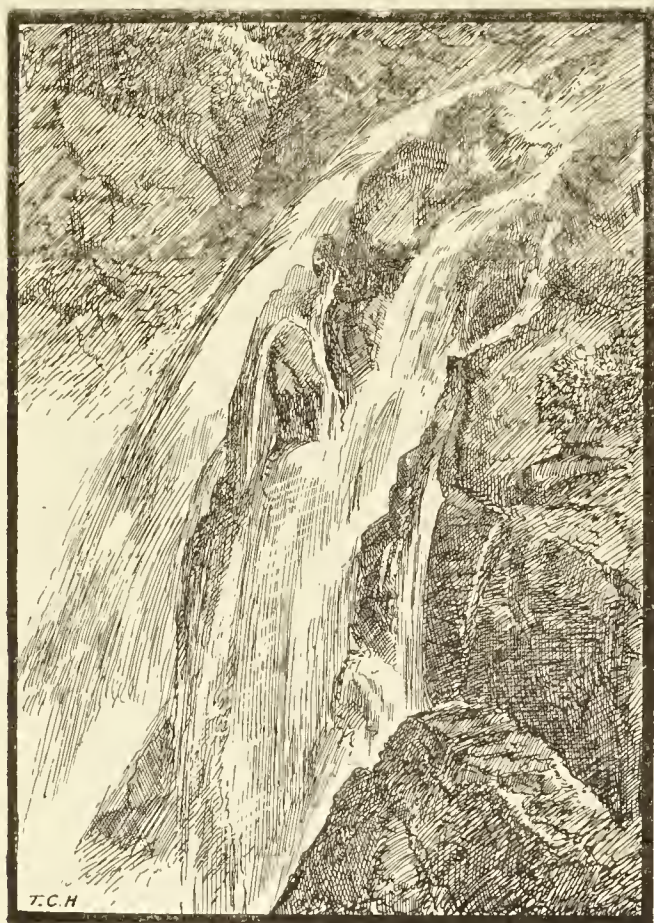
Cauterets lies completely enclosed in mountains, and a more out-of-the-world place could not be conceived, notwithstanding the fact that there is a casino, and that all the comforts of civilisation abound. We are told that other places on our route, notably Luchon and Gavarnie, are in their way quite as fine, so that we will visit those next time we are in that part of the world; but, for the present, we have not regretted our decision. Our last expedition "in search of the picturesque" was from Cauterets to the Lake de Gaube, about a mile above the sea-level, and to all who like novelty, combined with a little gentle excitement, and who love to see nature in some of her grandest aspects, we say, go there also. The journey was, in our case, performed on horseback—you can have mule-back if you prefer it—and altogether we were in the saddle five hours. Half-way up, about, we dismounted to take a shot at Pont d'Espagne waterfall, and exposed two plates, one for the trees, and the other, with a shutter, for the water. (The first turned out, on development, enormously over done, and the other developed *foliage and all*. We had, it appeared subsequently, greatly under-estimated the power of the light in all cases, and citrate of soda had to be heavily applied to the developer.) The animals require little guiding, and their habit of taking the extreme outside edge of the track is very cheerful, especially when they break into a canter, which they do whenever they come to a level; but, after dangling one leg in space for about an hour, you get quite accustomed to the idea. But the beauty of the scenery along the route, the terrible solitude of the lake, and the grandeur of the distant mountain-tops and glacier are beyond description by such a pen as ours. Descending is, if possible, slightly more stirring than ascending; but the journey was accomplished without mishap, in spite of the road being so steep that, in places, it is cut into steps.

Have you ever tried riding a horse up and down stairs? It's a novel amusement. Once, and once only, did we feel that the time had come for us to be firm, and that was when our animal, tired, and nearly at the journey's end, paused to decide whether he should keep the path and go some distance round, or take a convenient short-cut down the track of a landslip, covered with little stones. At our recommendation, he took the path—we didn't want to get in before the others. Some people prefer to make this journey to the lake on foot; the chief point of difference between that method and going on horseback amounts to this—that in the first case you will look forward with a great deal of pleasure to the prospect of



sitting down when you've finished, and in the second, you won't.

Homeward bound, next day we took a lovely drive to Lourdes, stopping a moment, by the way, at Pierrefitte, to "fire a shot." Everybody has heard of Lourdes, with its sacred grotto, and it is to English eyes a place full of interest and beauty; but one feels instinctively that it is not a place where we can unfold a camera. We were so fortunate as to see some hundreds of pilgrims there, kneeling before the famous statue; and, with the grotto



A Waterfall near Pont d'Espagne.

lighted by many tapers, and hung all over with crutches and sticks, they made a wonderfully solemn and impressive spectacle. Leaving Lourdes that evening, we spent an hour or two at Toulouse, regretfully missing, for want of time, Bigorre and Luchon, and then the "rapide" leaving Toulouse at about 4 a.m. landed us next morning at Bordeaux. Three days later we stepped ashore at St. Katharine's Wharf, and our holiday "in the Pyrenees country" was at an end.

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WE have received the first number of the new six-penny monthly journal, *Scientific News*. It is well printed, and contains numerous illustrations. It is to be devoted to the treatment of physics, chemistry, photography, &c., and we wish it well. The publisher is Mr. H. Vickers, 317, Strand.

## NOTES FROM NEW YORK.

BY DR. EDWARD L. WILSON.



AY the good work of the CAMERA goes on for another year, carrying with it hope and help, inspiration and instruction to the children of the sun. As to its generous publishers and earnest editor, I know that at this season they are exerting their best thought and talent for the common good. I am of their guild, and they have my sincere condolence; for never at any time has the photographic editor and publisher been forced to look upon himself as being in the position of Æsop's "old man" in the fable of "The old man, his son, and his ass," as he does now. At least, it is so with us in America, owing to the bitter feeling existing among our practical workers against a certain grade of amateur talent. So strong is this feeling that we are sometimes actually asked to declare our photographic politics before we are honoured with a subscription to our magazine. If we publish too much of the proceedings of the societies, be they never so helpful, "please discontinue" comes from all quarters; while if we confine our selections of matter to the use of the bread-winner, the amateur cries against us. And so we change from one attitude to another, like the "old man," trying to please all and every one, until now, at this season, when *all* our subscribers stand off, we feel like climbing the towers of a very high bridge and falling thence into a very deep creek.

Seriously, the time seems to have come in this country, as it has in the mother-land, when there must be a stricter classification of magazines—some devoted to the dealer in merchandise, sugar-coated with caterings more especially to the wants of the amateur talent so rapidly increasing here; some strictly and religiously to the practical photographer, and other some which will be amateur all through. And then "The old man" will continue to exist until his jumping-off time comes.

I have been trapped into all this, friend CAMERA, first by the prevailing element of things *à present*, and, second, by the appearance of Vol. I., No. 1, of the *Proceedings of the Camera Club*. A very neat, substantial, come-to-stay sort of a looking journal it is, too, and will find a place for itself, no doubt. It shows earnestness in the Club's work, and will secure to its members who cannot attend the meetings a very gratifying account of what goes on—more so than the ordinary journals can afford to devote to them. It is only a question of time when we shall have such an advocate of the amateurs here.

At present our societies of New York, Philadelphia, and Boston are busied preparing for the forthcoming combined Exhibition. It will, doubt-



less, be a grand affair, and will redound to the honour of photography. I wish the management could see the wisdom of clipping the affair from all semblance of awards. For the life of me, I cannot see what good such things do. They were good, perhaps, in an older dispensation, but, it seems to me, they have had their day. Does it not look so, when we are told that Mr. Vernon Heath did not receive a medal at the last Pall Mall Exhibition "because it would be an implied insult to offer a medal to so distinguished and well-known a photographer"?

When genius is so prevalent, and when genius becomes so sensitive as all this, the time has arrived, it seems to me, when the award and medal business should be thrown over the side of the bridge with our "old man." I had a genial letter from that dear old grey-beard in our art, Frank M. Good, Esq., of Winchfield, Hants. Grey though he be in the service of the camera, he loves it as much as ever, and his enthusiasm even grows. He uses dry plates, of course, and succeeds with them, but he confesses to feeling a *want* for his collodion vial, nitrate-bath, and tent when he goes a-field, and almost kicks himself for the sneaking way in which he is enabled to go about now, make an exposure as he would catch a fish with a fly, and then steal away as if he had done something wrong.

No doubt, many an old wet-plate worker feels the same way—feels as though his views are obtained with too little effort—as though it was wrong to take them at such little cost of work. But never mind, tender-hearted friends. Like the good Bedouin, accept what Allah sends, and complain not. This world is to be photographed—*all* of it—with some glimpses on the edges of our plates of worlds beyond. So we may as well accomplish the job easily. There is no use dragging a load up an inclined plane when a steam-hoist can be had to do it. My only fear is that we shall forget the study of art as we go on. I feel that there is too much complaining about low prices, and not enough honest desire to excel. In these depressing days, the man who must make his bread by his camera should study to excel. The public *will* presently recognise that "there is a difference" between his work and that of the man who does not try. Look up, push up, and cheer up, and may a happier year attend you all.

A friendly letter from London a few days ago contained a plaintive "howl" about the *cold* which our cousins there were suffering from this winter, and the many inconveniences brought upon the poor photographer thereby. He and his fellow sufferers have my sympathy, for cold is a great retarder and a disturber of the peace.

Our drawback this winter has been *wetness*. We have had, and are still having, what is called an

"open winter." And one would think that the whole Heavens were "open," judging by the floods which have been sent down upon us. "Bad printing weather" is the natural accompaniment of all this, so that every hour of sunshine is gladly welcomed. One result has been to give bromogelatin paper and its kindred a "boom," for they have been pressed into service wherever they can be made to take. And now, while London is cold and New York is wet, we are mutually anxious about the terrible shaking which our friends of the Riviera have just had. I have shared the sentimentality of an earthquake once in my short life, and I know that it discourages the tripod and destroys one's confidence in the rack and pinion. I know, too, that it causes a sad loss of life, even though it helps the enterprising photographer to live. It has been predicted that London is to "fall in" and New York to "float away." This would be preferable to a destructive "shake," for in the last case we must be destroyed, while in the other our two islands might grow to be nearer one another and focus together.

We seem to be growing more alike, at least, when we consider how the *conversazione*, or, as we call it, convention spirit, is growing on your side. There seems to have been a real lot of solid good done at the late *séance* of your Camera Club, and again at your Society meeting. When the right spirit prevails, good is always sure to result from such "rubbing together." But alas! unless the right spirit—the desire to grow—*does* prevail, the rubbing causes blisters, which are sometimes hard to heal. I tell no secret, nor start a scandal, when I write that it is so sometimes in our own wide land. But then my *ideal* society has not yet been formed. Upon the present plan not one half the good possible for the money and effort expended is done. The art we represent has now arrived at an age and dignity when it should support an organisation whose existence should be continuous—whose work should have a continuing action, a head-quarters, a permanent secretary, a continual exhibition at one or more central points, whereat, and from whom, and by means of which the photographic student and pilgrim could always draw help.

Such a body is one of the good things held for us in the matrix of the future. It will be born in good time. Great changes occur in this world of ours, and they come very quickly sometimes. I will draw you an example from nature. My office is located at the junction of three of our great business avenues. When I opened it this morning and took a survey from the window, a drenching rain was falling, and the passers-by looked chilled and forlorn. It was depressing and suppressing enough. Towards 3 p.m. the sun burst forth amid flakes of snow, and sent the cloud-masses prancing



toward the west, blushing with colour, yet frowning as they went.

Then I saw two of the most enterprising and cheerful of our pedestrians take their positions—one at the junction of Broadway and Fourth Avenue, and the other at Broadway and Fourteenth-street. The more chipper and prosperous of the twain had hanging upon his façade a huge burnished g(u)ilt frame, of rare and rich pattern, moulding at least five inches broad. It was the embellishing business for “a superb life-size crayon,” and it was labelled, in very large figures, 12 dols. The man behind it held a grin of victory upon his sinister visage, as though he were bearing a war trophy. His fierce compeer was the other man, who, upon front and back both, carried smaller frames, enclosing each a marvellous collection of “12 for 25” ferrotypes. He looked thin and spare, of course, for sandwiched as he is between those two frames, which are sent to and fro by his steady swing, he must grow thin in the very nature of things. And yet, with such low prices pervading in some quarters, business prospects are good in this country. I have recently, by means of private correspondence, been gathering statistics on this score, and am answered by many that “business was never better.”

I trust my friends on your side may share it, and be able to present a like report. I will open my bundle of statistics to you presently, and present you with some interesting data. Meanwhile, do keep warm, for a cold camera is of no avail.

## FILM PHOTOGRAPHY.

BY H. MANFIELD.



IN the *British Journal Almanack* for the current year will be found a contribution of mine on “Stripping Films”; but since it was written the process in question has been so improved that I gladly take this opportunity of bringing it before your notice, and at the same time of supplementing my paper in the Almanack.

The Eastman Company were kind enough to let me have for trial some of the first of these films which came over from the States, and I worked them last summer with complete satisfaction and success—so much so that I have no hesitation in recommending the process as one that will produce negatives in all ways equal to glass, and in some respects superior.

If I may not be considered out of place in going over the same ground twice, I may describe the Stripping Film (“American Film,” the Eastman Co. call it) as a film of *insoluble* gelatine emulsion attached to a sheet of paper (which serves as a

temporary support) by a thick layer of soluble gelatine. In appearance it resembles the ordinary negative paper, and its treatment is the same as regards exposure and development; in fact, if the negative is considered not worth stripping, it can be squeegeed to glass and printed from in the regular way.

Presuming the emulsion-coated paper to have been exposed in the roller-slide (and this is the only way to work films properly), it is cut into the right lengths and then developed. I may here remark that the emulsion is very rapid, clean, and free from fog, giving a brilliant image with any amount of density that may be required.

As to development, the Eastman Co. in their original instructions (they have not yet issued the new directions) lay special stress on the fact that soda developer must be used, as there is a risk of the pyrogallic acid, when mixed with ammonia, attacking the gelatine substratum and rendering it insoluble; although this may be right in theory, it is not so in practice, and I have always used ammonia-pyro development in preference, as giving negatives of better printing colour.

The following is the formula:—

- |    |                                  |
|----|----------------------------------|
| A. | Sulpho-pyrogallol.               |
| B. | { Potassium Bromide, 120 grains. |
|    | { Ammonia ‘880, 6 drachms.       |
|    | { Water (distilled), 6 drachms.  |

To develop—take water, 2 oz.; A, 20 minims; and B, 2 minims, commencing with half the quantity of B.

After development, wash the negative well and fix in tolerably clean hypo—this will, as a rule, do away with the necessity of using the acid and alum clearing solution later on. The negatives only require a few minutes’ washing and are ready for the first of the stripping manipulations—viz., squeegeeing to the collodionised glass. Take a clean glass plate  $\frac{1}{4}$ -inch larger all round than the negative, dust it over with French chalk, rub clean with a cloth, and then coat with plain collodion. I am informed that enamel collodion diluted with 2 oz. ether and 1 oz. alcohol to the pint is the correct thing, but I turned out an old bottle of autotype transfer collodion, which answers perfectly. Let your collodion set well, and wash the plate thoroughly until the greasy lines have disappeared, then put your negative face downwards into the dish, bring it out clinging to the collodionised plate, and squeegee in the usual way; of course, putting a sheet of American cloth between the negative and the squeegee, and not using the latter too vigorously. Now lay the plate on a table, negative upwards, place two thicknesses of blotting-paper over it, and then put upon the top of it a board with 10 to 14 lb. weight on it. Take negative No. 2, squeegee it to a collodion-coated plate as before, and place it on the top of



No. 1 with two more sheets of blotting-paper, and so on, until you have a pile of about a dozen negatives under the board. This is an operation that does not take long, as a dozen plates can be coated and the negatives squeegeed on within an hour, and by this time they are ready for the first stripping, which may take place any time within fifteen minutes to two hours (or more) after the squeegeeing.

*The stripping off the paper support* is next proceeded with as follows:—Turn your pile of plates upside down, and place No. 1 in a porcelain dish, pour over it water at 100 deg. to 120 deg. Fah. (not hotter). In about two minutes the paper will blister up and become loose at the edges; then you can lift it up bodily at one corner, and gently draw it off the negative film, which will remain firmly attached to the glass; then with a little more warm water wash off any of the gelatine substratum that may be still sticking to the film. With ordinary care failure is impossible; but it is well not to use water at too high a temperature, or to attempt the stripping too soon after squeegeeing, or failure may result in either case. Stripping from the collodionised plate contrasts wonderfully with the original method, which required great care and delicacy of manipulation, for you can go ahead now without the slightest risk of spoiling your negative. No pouring boiling water over the film, or rubbing it with the finger (generally into a hole) to get off the paper which would stick in some obstinate place; and, what is equally important, no waiting for the negative to dry between the squeegeeing and the stripping; but you can develop, strip, intensify (if necessary), and attach the gelatine skin, all one after another without delay. As regards intensifying, you can judge of the density of the image so well in developing that it should be seldom necessary; but when it is required, silver or mercury intensification can be applied at this stage. Should clearing be thought desirable, acid and alum can be used, but *not previous to the stripping*, since alum in any form would probably render the gelatine substratum insoluble.

*To squeegee the "skin" to the film.*—When the process was first introduced in America, a warm solution of gelatine was poured over the film after the paper had been stripped off, and the plate was then set on a level shelf to dry; but as this involved a lot of trouble in the drying—which took longer than a gelatine-plate does to dry in its preparation—the Eastman Company substituted what they term a "skin," which is squeegeed to the plate instead. This "skin" is composed of gelatine, to which is added glycerine to render it flexible, and must be cut in pieces rather smaller than the negative, as it expands considerably when wetted. It should be soaked in water containing a little glycerine (glycerine, 1 oz.; water, 20 to

25 oz.); for, if placed in water alone, the glycerine in the skin dialyses out, and the film becomes horny on drying. If, on the other hand, too much glycerine is used, the film will take a long time to dry and be difficult to strip from the glass. The solution is best used fresh for each lot of films, or difficulties will occur in the drying. After the "skin" is soaked until quite limp, it is squeegeed on to the film—bright side outwards—taking care to avoid air-bubbles; it is then set to dry, the time occupied in drying depending very much on the warmth of the room and the state of the atmosphere. I have repeated at length, from the article in the Almanack already referred to, these details bearing on the treatment of the gelatine "skin," since I consider them important for the successful working of the process. As to the drying of the plates, this occupies about the same time as the ordinary gelatine negatives on glass. I usually carry my films into the kitchen at night, and find them dry next morning. *When perfectly dry*, the film should be coated with collodion, and in a short time can be cut round the edges with a sharp knife, and stripped without difficulty from the glass. The object of this last coating of collodion is to prevent the film being affected by damp, and in this respect these latter negatives are superior to those made by the old method, which were liable in time to become slightly spotty, or to get stained by contact with the sensitised paper in printing, if the paper was not absolutely dry.

Owing to the recent improvements in the process, it will be found: 1st—That the stripping off the paper support is now a most easy and certain operation, on account of the drying of the film after squeegeeing to the plate being dispensed with; and secondly—That the whole of the manipulations will occupy no more time than is required for the washing and drying of a gelatine negative.

Several films should be treated in succession; and, of course, a certain amount of method is necessary in working a process of this nature, but nothing beyond ordinary care is requisite to make it a success. Personally, I have found it in every way successful, and consider the negatives made by it will compare favourably with those made on glass, and be superior as regards halation,—in fact, I look to film photography for a distinct advance in the future in both landscape and interior work.

For tourist work, some films are simply invaluable; and who has not felt the want of them when travelling abroad, with the difficulties of the Custom House, the bulky luggage, and the risk of breakage? But we shall change all this, and with our roll-holder and spools of "strippers," set off in future to the "Continong," with the happy assurance that we have no plates to be smashed





On the Norfolk Broads.

by the railway officials, or to be opened at the Douane; and, added to this, shall have the satisfaction of knowing that at the end of a long day's toil we shall be freed from that most tiresome of occupations, the changing and numbering of one's plates. Eastman & Walker, we shall bless you then!

### PHOTOGRAPHY ON THE NORFOLK BROADS.\*



LITTLE book, by our esteemed contributor, Mr. Mostyn Clarke, which is now before us, might have been better described as three weeks sojourn on the Norfolk Broads—for it is a portion of the log of the yacht *Rover*, while cruising about those pleasant expanses of water which are so characteristic of Norfolk and Suffolk. The interest of the book is much enhanced by the illustrations, which are taken partly from photographs by the author, and partly from sketches by Mr. Edward H. Fahey, R.I. From these illustrations we can learn much of the peculiar scenery of the Broads; and from the clearly-written and descriptive text we get a good idea of the pleasant, breezy holiday which

Mr. Clarke enjoyed. Some would-be artists are apt to sneer at the possibility of finding anything worth depicting with a pencil in flat countries; and the marshes of Essex and the Broads of Norfolk would alike come under their condemnation. But photography has taught such pseudo-artists that pictures are to be found in plenty, if the looker-on have only the faculty of detecting them and acknowledging their artistic value. Mr. Emerson's camera has already taught us what artistic riches are hidden in these same Broads, and Mr. Mostyn Clarke, and his friend, Mr. Fahey, do but corroborate his experience. This little manual, with its fifty pages of clever scenic description, and its quiet touches of humour concerning the vagaries of the captain and the crew, which, all told, consisted of one individual, is well worth perusal. It would be valuable to anyone contemplating a trip of the same kind, for it not only tells one what to see, but cautions one about little difficulties which it would be well to avoid, if possible. There is even a romance wrapped up in the volume, for the author meets a village belle, and wonders "how a being so refined, with so much polish of manner, having so good a taste in dress, and being almost free from the local dialect could be——;" but we must really refer the reader to the volume itself. We reproduce three of the Meisenbach blocks which adorn its pages.

\* "Three Weeks in Norfolk." By T. F. Mostyn Clarke (Wyman & Sons.)





A QUIET PIPE.







## PHOTOGRAPHIC PORTRAITURE.

BY WILLIAM CROOKE.

(Read before the Edinburgh Photographic Society.)



I CANNOT recall from actual experience the conditions under which portraiture by the aid of the lens was prosecuted in what appears to us now as times almost remote; the calotype, the daguerreotype, I had no part in. The sitters of those days were doubtless in all essential respects identical with the people who sit to us now, requiring substantially the same attentions at our hands, though not so exacting in their wants and expectations, because the popular taste and education in art advances with the progress of our art itself. What satisfied thirty years ago the general sitter would not find any favour now, just as the long sittings required in early times would not be tolerated now, for the state of the case is well known, and something like an exposure of a few seconds, more or less, is looked for as a matter of course. The word "instantaneous" has come to be associated with all photographic operations.

In portraiture a succession of phases has been passed through, looked at from a professional point of view. One who has stood beside the camera for a number of years can call to mind distinct features belonging to successive periods. These may apply to pose in some instances, and in others to accessories, and so forth. At certain dates we can speak of this or that style being "in fashion." There was, for example, the plain background, then the pillar and curtain, then the picture era, the introduction of the solid accessory, and the time when every one who stood for a portrait was made to lean on the back of a chair. Of course, there were always those who had perceptions of the fitness of things superior to the common tendency of the time, and stood out as the stars of the profession, and no doubt it will always be the same. We live in a time which will take its place in photographic history, and have its characteristics pointed to in turn. It is well, however, if we can rise above our environments so far as to be able to know what is merely temporary and what is enduring in the principles which guide us in our art and practice. For the beautiful is everlasting and can be admired and enjoyed at any time, even long after it may have been discarded for some new form or method of producing an effect.

As the painter must ever be beholden to his brush and other mechanical aids to the expression of his genius, so must the photographer make intelligent use of his appliances in order to the production of his best efforts. As portraits may be painted or produced by other means than

those usually employed, so may photographic portraits be produced without a studio, but to the professional man the studio is as necessary in the one case as the other. Amid all changes certain requirements remain, and the studio is one of these. Let me say a word about it. All manner of construction and situation is to be found, and probably advocates for every variety we can think of; but while many are compelled to do with less than they could wish, or a different situation than they could desire, a very general inclination will be found in favour of a north light. My own preference is decidedly towards a north or north-east aspect. My studio is 7 ft. 6 in. in height at the side, rising from that at an angle of 45 degrees. This I consider a good serviceable height. It will be found that a high roof lessens the effective control of the light by the operator, without which just so much more difficult and uncertain will it be to obtain the most satisfactory results.

The construction of a studio, apart from its relation to the principal light, has not, I think, very much effect one way or the other on the work produced in it, unless it is of a most awkward and inconvenient description. It must be a very faulty studio indeed in which good work cannot be done, provided there be on the part of the operator the necessary knowledge of the requirements of any particular case, and how to meet them by skilful adjustments, and what I might call artistic tact.

In the matter of lighting the subject, one man's work is apt to partake of a certain uniformity of character, arising from his constantly working under the same, or nearly the same conditions. A very common error many operators fall into is to set every sitter on the same spot and endeavour to direct the light they judge most suitable on that spot, instead of trying the effect of different points, where they may be placed in relation to the main light—in fact, bringing "the mountain" to Mahomet, instead of Mahomet to the mountain. Where the facilities for doing this are very limited, or where it cannot be done at all, there is no more to be said, and the best must be done with what is available.

Where we have to deal with strong contrasts, such as white hair and high complexion, or white and black draperies, the subject will be most effectively treated by being made to face the light; where the conditions are reversed, an opposite treatment, according to the particular demands of the case, must be resorted to. The matter can only be referred to in general terms. A skilful operator will determine what to do when the subject comes into his hands, and especially when he sees the sitter in the light which falls just about where he is to be taken.

If good lighting necessitates considerable study



and knowledge of effects, posing demands no less ; indeed, the art of lighting a subject may be mastered with tolerable completeness, while posing may never be thoroughly acquired, because it is less of a mechanical accomplishment. It calls for a knowledge of harmony of lines, and the effect of balancing of parts—what, in short, is described as composition, and which everyone does not naturally possess. An operator may fail in this, just as painters sometimes do, who, though good colourists, are defective as draughtsmen, and in the ability to conceive a good picture. We sometimes feel that photography is too literal to be artistic. From a client's point of view, its tendency is to exaggerate the imperfections rather than the *perfections* of face and figure. Should you have a stout figure to photograph, the neck, as a rule, will appear short. To obviate this appearance in the portrait, it is best to adopt a standing pose, with the camera a little below the level of the head. If a sitting position is chosen, undue height will be given to the shoulders, and the shortness of neck will be emphasised. In treating the opposite extreme

—a thin figure with sloping shoulders (not so objectionable in the gentle as in the sterner sex), I recommend a sitting pose, and in the case of gentlemen, especially when the head is large, a little drapery, in the form of an overcoat, loosely thrown back. The head should be turned in the reverse direction from the angle at which the body is placed, which will help to give the appearance of substance and harmony to the figure, and altogether make the picture more pleasing. A little

attention of this sort will improve defects in the sitter just as easily as the want of it may produce them where they ought not to exist. As a rule, twist the figure as little as possible when the person is stout.

No doubt many present have observed that some people turn the head more gracefully in one direction than in another ; the head seems balanced in the one case, while in the other it may be the line of the neck and shoulder forms too great an

angle. Should it be necessary to take that view of the face which gives prominence to this defect, turn the figure away, and the head towards the camera.

Allow me to say a few words as to the treatment of the different features of the face.

When the forehead is high and broad, no particular attention need be paid to the view taken of it ; but should it recede too much, and a side or three-quarter view of the face be wanted, let the outline blend with the background. The same treatment should be resorted to where there is an undue fulness of the upper part — of course, in children this is common, and is no

defect, but when occurring in the adult, is better to be modified.

Very often one brow droops a little, or the eyelid may have the same tendency in which case I find the best plan to avoid exaggerating this inequality is to turn the figure to that side and the head towards the camera, keeping the droop in the shadow. Variety in noses is endless ; make the lens look down at the short, and up at the long, or rather place them in these relations to the lens.



On the Norfolk Broads. (See page 280.)



If the outline be ungraceful, modify it by more front view. A really good or beautiful nose will be valued by its possessor, and its beauty will be best exhibited by a slight turn of the head; a broad nose is improved by the same treatment and a somewhat sharp light.

The full eye, when light, is difficult to manage, and if all other conditions are suitable, should be turned away from the light; in fact, the greater portion of the face should be in shadow. When the eye, on the contrary, is dark, avoid reflections which show with marked effect on the eyeball. A sullen eye is generally turned towards the light, but I prefer it turned away, and the light diffused with a medium, such as tissue-paper close to the head. As regards the expression of the eye, we must remember that this is an act of the mind, and not of the will, and that the old style of request, when being taken, to "Look a little pleasant, please," was wide of the mark, as the endeavour to do so never affected the eye or intellectual part of the expression.

With reference to the mouth, the chief want felt in photographs is lightness and transparency of shadow, caused by the non-actinic colour of the lips, as where they are brightest, and therefore most beautiful, the photograph gives the reverse effect. A good deal can be done on the negative to rectify this.

No man will succeed to any great extent as a portraitist who does not exercise a constant and intelligent observation on all that affects his sitters. Details that to a careless or unobservant mind might seem too insignificant to pay any attention to, may yet be of the greatest importance. The

things which go to make a pleasing portrait in any one instance may be in themselves little matters enough: the turn of the head, one inch this way or that, the raising or lowering of the eyes ever so little—nothing, in fact, is too small to notice. Let the eye of the operator acquire the habit of taking in his whole sitter. An artist about to paint a portrait considers it necessary to have numerous interviews with his subject, so as to become acquainted with what is natural in the way of pose and expression,—in many instances even residing with them for a

time, and opportunities are afforded thereby of studying them under various conditions, seeing them in their different costumes, and selecting the one he thinks most suitable. How different is the expression of the faces of people when at their own tables, or in the midst of friends on any social occasion; how vastly different from what we see them when about to take the cap off the lens! An active consciousness enters in and deprives the picture of natural grace and beauty, as well as freedom of expression; the hands very often suffer, losing entirely

their natural disposition. When you are thoroughly acquainted with your subject you cannot be deceived by this conscious expression, and you can remind your sitters that they are not looking like themselves. Now, how can this be said or done when ten minutes previously you did not know such a face was in existence? This is the only reason I can give for so many random and missing shots in photographic portraiture. Knowledge of the subject, I say, is more or less a necessity when the highest results are aimed at.



On the Norfolk Broads. (See page 280)



But you may say, How is this knowledge to be obtained? Are photographers to spend a week or fortnight at their clients' houses previous to photographing them? Such is impracticable, and certainly in the case of small-sized photos, photographer and sitters in the majority of instances must be strangers; but my remarks point more to larger photos direct from life. I consider it risky—I don't say impossible, because it depends on the subject—to take a large direct picture of a person ushered into your presence and out again in the space of twenty minutes. On a first visit a carte might be taken, and on a second visit a cabinet, then the large one when you have gained the necessary acquaintance with your sitter's expression. It is a wonderful art, and because it is so, greater wonders are expected to come out of it. The stream of its rapid advance is not confined to one channel, but it continually overflows and tends with eager haste to fields and pastures new.

## FORMULÆ FOR DEVELOPERS: HOW SHOULD THEY READ?

BY DR. JOHN H. JANEWAY.

(Read before the Society of Amateur Photographers of New York, February 8, 1887.)



THINK that the questions we have for discussion to-night are both apt and timely, especially so when we see how flooded the literature of our art-science is with the constantly-increasing armies of developers.

The tyro is early told by the many writers "to choose out a good developer and stick to it." Sound and good advice, surely. But how is he to pick it out?

It is like taking a young man into a machine-shop and saying to him, "Here are all the materials required, and all the tools necessary to work with; now go to work and build a locomotive." Does he know the difference between a wrench and a jack screw? So it is with the beginner; scores of formulæ for developers are before him, but what does he know of the properties of the different ingredients? The pyro, what is it for, and how does it act upon the emulsion or the plate to bring out the latent image? The carbonates of soda and potash? He sees that some use one, some the other, and some both. Is he told their action and the requisite amount necessary to produce that action, and what is the sulphite of soda added for to the above, sometimes in "A," and sometimes in "B"? He is told that citric acid and its salts, and the bromides are restrainers. Restrainers of what? He sees that the bromides are recommended for over-exposed and under-exposed plates; but why?

And so on. Even the fixing-bath is a perplexity to the beginner.

But even when he has mastered, to a considerable extent, the properties of the different articles comprising the developing-bath, his troubles are not at an end. The great array of unscientific, incongruous, bulky, wasteful, and happy-go-lucky developers (and a careful survey of the different published formulæ will soon show that each of the above classes has one or more in its ranks) stare him in the face. From which is he to choose? If he is determined to know himself, and not take the word of another, he begins by mixing up one developer after another, according to the formula given in each case, and tries them in turn, in search of a good developer, and the one that will give him the best reward for his work, but he soon finds the shelves of his dark room full of bottles and his pocket-book empty. Or suppose that a fair young lady amateur, not having the knowledge, time, or facilities to prosecute the above experiments, chooses, by the advice of a friend, a certain developer, which must be made up strictly in accordance with the formula. Intending to take a trip for a short stay in the country, where she hopes to make some shots at choice bits of woodland and lawn, she has the developer made up for her at the nearest drug store, never dreaming of the result in bulk. Now "A" calls for 60 ounces, "B" 46 ounces, and an equal quantity of hypo solution is required. To start she must sling her camera in its case over one shoulder, tuck the tripod under her arm, seize two one-gallon demijohns in one hand, a demijohn of the same size and one or two hand-bags in the other. Her dismay at this bulk can easily be seen. "The impediment" of this outfit would soon tire out the most enthusiastic of amateurs.

How much better it would be, especially to the amateur, if all the formulæ were given so many grains to the ounce of water. It would take but a glance to convince him whether it was a scientific one or not, whether the proportions of its ingredients were correct and capable of producing the best and desired results. What a saving of time and money it would result in; saving in solution many of the salts used, and especially sulphite of soda, which rapidly deteriorates and becomes useless, or nearly so. Why, then, make them in that way? Why not let the formula read:

Carbonate of soda .....	So many grains
Sulphite of soda .....	" "
Pyro.....	" "
Water .....	1 ounce.
Carbonate of potash, or soda...	So many grains
Water .....	1 ounce

and then multiply each ingredient by ten or its multiple, and you will have a developer of sufficient



quantity and sufficiently fresh to meet all demands? And then, if the plate-makers would paste on the cover of their boxes their formula for the developer reduced to grains to the ounce, it would be of great advantage and economy to any one trying one or two plates. The developer could be made up before opening the boxes.

A careful analysis of eighteen published formulæ shows a great diversity in the amounts of the ingredients, and—

{	The largest amount of pyro used to the ounce of water .....	10 grains.
	The largest amount of sulphite of soda used to the ounce of water .....	80 „
	The largest amount of carbonate of soda used to the ounce of water ...	40 „
	The largest amount of carbonate of potash used to the ounce of water .	$2\frac{1}{10}$ „
{	The smallest amount of pyro used to the ounce of water .....	$1\frac{3}{5}$ „
	The smallest amount of sulphite of soda used to the ounce of water ...	5 „
	The smallest amount of carbonate of soda used to the ounce of water ...	$1\frac{1}{5}$ „
	The smallest amount of carbonate of potash used to the ounce of water...	5 „

In many of the formulæ the amount of sulphite of soda was largely in excess of the quantity generally conceded to be required in proportion to the pyro, 4 of sulphite of soda to 1 of pyro. But in one we have sulphite of soda, 50 grains, pyro, 6 grains. One worker describes his alkali as weak, 40 grains to the ounce of water!

The use of saturated solutions in making up the developer should, I think, be discarded, for the reason that they are uncertain, the changes of temperature and evaporation rapidly affecting them; and then the mixing of two or more saturated solutions oftentimes produces the deposition of more or less of one or both of the salts, but never in equal proportions.

I think also that the use of either the dry or granulated salts is objectionable, especially the carbonates—carbonic acid is not the most stable element. In the crystals you have a fixed and determinate quantity, and they should therefore always be called for.

I have not referred to the question whether the ounce should always be regarded as composed of 480 grains, for if the method of writing the formula in so many grains to the ounce of water be adopted, there is no further trouble to be apprehended as to whether the ounce is 437 or 480 grains. But should the term be used? I think that the quantity in grains should be given (in  $437\frac{1}{2}$  grains or 480 grains). This is rendered necessary from the fact that most of the articles used are sold by avoirdupois weight,  $437\frac{1}{2}$  grains.

Another good plan, in directions for making up the formula, if the grain system is not adopted, would be to say: Water, to make so many ounces.

## A NEW REGULATOR FOR THE LIME-LIGHT.

BY THE EDITOR.



ANY workers with the lime-light now use gas-bottles instead of bags, but it cannot be said that the bottles are employed universally. There are one or two circumstances connected with their use which old-fashioned exhibitors are apt to regard as prohibitive. The first of these is the immense pressure under which the gas is stored, viz., about 600 lb. to the square inch in the iron bottles, and a great deal more in the steel bottles recently introduced. This pressure renders the gas difficult of control, and unless it be most gradually turned on it is apt to blow off all the rubber connecting-tubes from the lantern and its belongings. This fault can, of course, be obviated with ordinary care. The bottles are so convenient in size, they take up so little room in comparison with a bag of the same gas capacity, and they save so much trouble and mess by affording a supply of oxygen ready made, that there is great temptation to employ them.

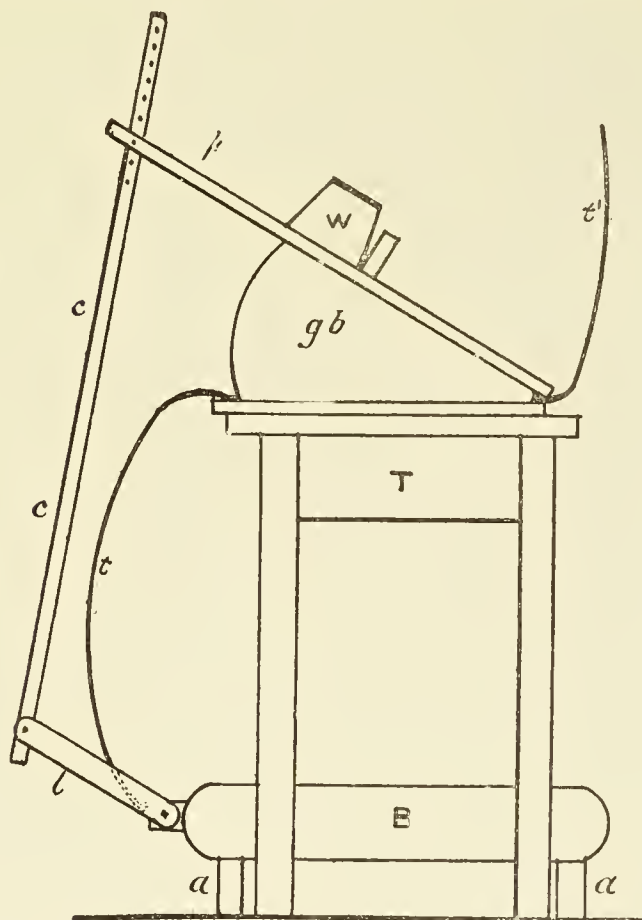
For a single lantern, and where the blow-through or safety-jet is used, all is plain sailing, provided that the supply from the bottle is regulated from the screw-valve attached to it, and the oxygen stop-cock on the lantern-jet be turned fully on and left alone. But in using the bi-unial, or triple lantern, a difficulty at once arises. It is obvious that the correct supply of gas for one lantern cannot be made to serve two or three. So that when the light is required in more than one lantern of the system, we are forced to do one of two things. We must either keep the two or three lanterns with their burners fully going, and waste a large amount of gas, or we must continually move the valve on the bottle, to increase or diminish the supply according to our wants. When mixed jets are used, and both the hydrogen and oxygen are under pressure, a bottle must be used for each gas, and all these difficulties are multiplied by two.

For these reasons an elaborate regulating machine, which screws on to the bottle, and delivers the right amount of gas for one, two, or three jets, at the will of the operator, has been contrived, and it works well. I hear that others have been invented, and will shortly be before the public.

I have lately worked out a method which I beg to submit to the judgment of my readers. It has the merit of simplicity, and I see no reason why it



should not act in the most perfect manner. The annexed diagram will, I trust, render my explanation clear; but let it be understood that it is merely a diagram, and that in reality all the parts would be duplicated, so as to control the gases from two bottles—oxygen and hydrogen—placed side by side. For convenience sake, let us now consider the diagram to refer to one bottle only.



T is a table upon which stands the small gas-bag *gb*, placed between pressure-boards in the usual manner. The upper one of these boards is prolonged, as shown at *p*, and this prolonged part is fastened by a pin to a connecting-rod, *cc*, which at its lower end is geared in the same way to the lever *l*, which works the valve of the bottle B, placed under the table. The bottle is supported upon cradles of wood, *aa*, so as to give the lever *l* the necessary free movement downwards as well as upwards. W is the weight on the pressure-boards, which, in the case of a small bag such as that described, need not be heavier than about 28 lb. A rubber tube, *t*, connects the bottle with the bag *gb*, which bag must be fitted with a nozzle—not necessarily a stop-cock—at its back, as well as one in the usual place at the narrow part of the wedge. The normal stop-cock is connected with the lantern by the tube *t'*.

Having described the various parts of the arrangement, we shall now be able to see how it works in practice. The lever-tap attached to the gas-bottle must be so adjusted that when it is turned

downwards the valve is open, and the gas will rush out, but when it is pulled upwards it is shut and the outflow is immediately stopped. It will now be seen that the movement of the upper pressure board on the bag above will control this outflow with the greatest nicety. When the bag is nearly full, the connecting-rod, *cc*, will shut off the supply from the bottle, but directly the bag becomes partly emptied by the call constantly made upon it by the lantern, the weight above will drive down the connecting rod, and a fresh supply of gas from the bottle once more fills up the bag. In practice it may be necessary to fasten the forward end of the lower pressure-board to the table by a hook and eye, in order to prevent any chance of the bag being pulled backwards by the action of the connecting-rod.

The amount of weight upon the bag will be according to its size, but the right amount can be easily estimated in the following way:—Procure a glass tube of this shape, U, and put a small quantity of water in its bent part. Holding it upright, connect one arm of it by means of a rubber tube with the stop-cock of a gas-bag of the normal size—say 10-feet capacity—and ascertain the difference in inches between the level of the water in the two tubes when the pressure of the gas is submitted to it. During this operation, weight the bag with 1 cwt. or  $1\frac{1}{2}$  cwt., according to what your custom may be. Using this same instrument applied to the smaller bag, the right weight to suit the altered conditions can readily be ascertained. This instrument is constantly used by organ-builders for the purpose of measuring the pressure of the wind delivered by the bellows. It is called an *Anemometer*.

## GROUPS.

BY ADA S. BALLIN.



HERE can be little doubt that the photography of groups is by far the most difficult branch of portraiture. If in taking the portrait of a single person the artist has to overcome a serious obstacle in the will of his client, who is, of course, persuaded that he ought to know best what dress, attitude, and general make-up is most becoming to himself, this trouble is doubled, trebled, quadrupled, or still further increased with the addition of every opinionated unit that goes to make up a group. Each individual has his own views, not only as to how he or she will look the best, but also as to the general arrangement of the whole party, the various members of which, as a rule, entirely differ among themselves on this point. Hence, in order to quell rebellion in the camp, the photographer has



to assert his authority in a very definite way—an exercise of seemingly arbitrary command, which is frequently resented as tyrannous, and does not tend to improve the facial expressions of the “subjects.” How often the figures in a group look like the denizens of a dentist’s waiting-room, each expecting his turn to be summoned into the dread sanctum, and endeavouring to conceal his anxiety with an assumption of stolid unconcern. The figure is stiffly drawn up, all the muscles of the face tense, and the hands nervously grasping some convenient object, such as an umbrella or hat brim, on which to relieve the agony of suppressed feeling.

Of all forms of group portraiture, the most objectionable is the arrangement in rows or serried lines so generally adopted when considerable numbers have to be included in the picture. If this can ever be recommended it is in the case of photographs of drilled bodies of men, such as soldiers or the police, the formal arrangement of which gives a somewhat pleasing idea of the degree of discipline attained. In such cases the officers placed in the foreground also serve to break the monotony. In dealing with classes of school-children and others, the stiffly-arranged lines may be broken by the judicious posing of monitors, masters, or mistresses. In some excellent groups of boys and masters from University College School, the smallest boys are seated in a row cross-legged on the ground; those of the next size are seated on chairs behind these. At the back of the second row stands a line of taller boys, and the rear is brought up by the tallest of all. One or two of the masters generally form the centre of the group. The effect is remarkably good, the faces being clearly brought out, so that it is possible to recognise each individual out of the hundred or more included in the picture. In the case of the naval cadets on board the training-ships off Dartmouth, the line arrangement has also been adopted with considerable success, giving the idea that the pictures have been taken during drill.

With regard to numbers of adults not subjected to discipline, however, this arrangement is the last which should be adopted. I have in my mind’s eye at the present moment a ridiculous scene which I witnessed at the British Medical Congress held at Brighton last year. A photograph was to be taken at an afternoon fête of a group of the most celebrated medical men who happened to be present. About fifty were collected, and the photographer called for a number of chairs, which he arranged in a nice regular semi circle. On these he seated the eldest of the gentlemen to be taken, the others forming up and standing behind the chairs. When all these elderly luminaries were seated, like a row of shamefaced school-boys, the fun began. There

was a general smoothing out of garments, rearranging of hair and whiskers, pulling up of shirt-collars, pulling down of cuffs, and stiffening of backs. Then some one conceived the idea that he would look better without his hat, and this idea spreading down the rank all removed their headgear, with the exception of about two, who planted their tiles firmly down over their brows, placed their umbrellas between their knees and leant forward, resting both hands on the umbrella handles, with an expression of determined obstinacy, as much as to say, “Here we are, and no one shall induce us to move.”

Meanwhile, those who had removed their hats were at a loss where to put them, but finally decided either to place them on the grass, well in the foreground, or to balance them upon their knees.

But the expressions were most amusing. Some seemed to think they would look best if in apparent conversation with a neighbour; the editor of one of the best-known medical journals, who happened to be at the end of the row, by a skilful arrangement of his umbrella, managed to hook himself into the shape of an S, leaning forward to consult a friend. Others tried to assume a dignified calm, and again, others appeared to be seated in the dentist’s chair. The photographer, who was seemingly overwhelmed by so much assembled learning, made no effort to produce a better state of affairs, and contented himself with merely requesting the gentlemen to “remain motionless” when the time came. The effect of the picture can be but faintly imagined by the above description; suffice it to say that Lincoln & Bennett had the best of it. The photograph might have represented the flower of medical England, but it appeared that the human background was inserted chiefly as an accessory to a group of eminently respectable chimney-pot hats. Yet so ignorant is the general public of the principles of art in photography that this absurd picture easily passed muster, and no one seemed to notice anything amiss with it.

The placing of a group is a matter which calls for no little skill, taste, and tact on the part of the operator. The subjects should be placed so as to form as nearly as possible the arc of a circle, of which the lens shall be the centre. This was, of course, done in the above instance, but the arrangement ought not to be made, as in that case, evident to all beholders. It should be concealed as far as is possible. Unless a very small stop is used, however, the figures ought not to be at very disproportionate distances, or those furthest will be dwarfed in size, especially if a lens of short focal length is used. Indeed, it should be made one of the principles of group portraiture to use lenses of the longest focal length available, as with them shorter exposures are needed, and the figures will have a more natural look.



It is most desirable that different aspects of the faces of the sitters should be represented. If all gaze straight at the camera, as they usually tend to do, the effect is simply spoiled. If possible, all the persons should be occupied in some way, so that they necessarily assume various positions, some showing full face, others three-quarter, and others profile. In this way, too, the physical peculiarities of individuals may be better studied.

When children or babies are to enter into the picture, they should be placed lying comfortably in the arms of the elders, or with their heads supported on convenient shoulders, so that they will be likely to remain still. When animals form part of the group, care must also be taken to ascertain that they are comfortable, so that they may remain quiet.

*Avoid the formal*, except in cases the nature of which render it desirable, is a maxim which should be ever present to the mind of the photographer, who should never forget that the highest art is "to conceal art."

CARDIFF AMATEUR PHOTO SOCIETY.—The March meeting of the above society was held on the 11th inst., S. W. Allen, Esq., in the chair. The arrangement for Mr. T. C. Hepworth's lecture was confirmed for the 23rd inst., to take place at the Lesser Park Hall. At the suggestion of Mr. H. C. Emery, the hon. sec. was instructed to obtain a substantial album, contributions for which will be solicited from the members, and, when filled, presented to the Cardiff Infirmary. If sufficient prints are received it is proposed to present albums to other institutions in the town. The hon. sec. would be pleased to receive contributions from friends at a distance.

MANCHESTER AMATEUR PHOTOGRAPHIC SOCIETY.—At a recent meeting of the above Society, Mr. W. Russell exhibited an improved changing bag, the novelty of which consisted of a window of stained parchment. This, he said, was a thing much wanted, and not to be had from the trade. Mr. T. Steventon gave a "Demonstration of Carbon Pigment Development;" but, previous to doing so, he gave a slight outline of the early history of this process, and stated that Mungo Ponton was the first to note the action of light on paper that had been immersed in a solution of bichromate of potass. Bequerel discovered that paper which had been sized acted much more rapidly than unsized, and so came the introduction of colloid substances with the bichromate of potass in such experiments. Mr. J. Wilson Swann was the first to bring printing in pigment to a practical issue, and in 1862 he took out a patent for pigment tissue and the use thereof. He contended that if the print was squeezed face downward upon a surface of glass or metal impervious to air, it would adhere by atmospheric pressure. After following the use of carbon or autotype printing up to the present stage, he then proceeded to develop prints for the benefit of the members. A vote of thanks was warmly accorded to Mr. Steventon.

## Answers to Correspondents.

—o—

*This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.*

—o—

T. J. O'C., Ireland.—1. We have forwarded your letter as requested. The formula given would make up to about nine fluid ounces. And one ounce of pyro contained therein (*i.e.*, 437½ grains) would be equal to a fraction more than six grains of pyro to each fluid drachm. 2. A one-grained solution is understood to mean one grain to the ounce of water. A more convenient method of keeping gold in solution is to break a 15-grain tube into 15 drachms of distilled water.

R. C. W., Poona District.—For small objects such as you refer to we should be inclined to use a 2 inch or 1½ inch microscopic objective instead of an ordinary photographic lens. This you may be able to borrow from some friend in order to try the matter experimentally. Adapt it to a quarter-plate camera, and use actual sunlight to illuminate the object. We know of no book that would be a help to you.

ULSTER.—Thank you for your good opinion. You will probably get rid of your blisters if you reduce the strength of the fixing-bath. Try three ounces of hypo to the pint of water, and add to it a few drops of liq. ammonia. The plates will keep well, if preserved from damp and light, for an unlimited period.

PUZZLED.—Make a saturated solution of the powdered salt, and place some on a piece of glass to evaporate and crystallise. If the crystals are square-shaped the salt will be the chloride, and if rhombic it will be the chlorate.

H. A.—In the operation named the nitrate of ammonia is eliminated because it is soluble in the water employed for washing the emulsion, the silver bromide being retained because it is insoluble.

HOPEFUL.—Your idea may be worth patenting, but we would not advise you to take that course unless you are prepared to go to the cost of full protection, and possess capital enough to place the contrivance upon the market. It is a melancholy truth that but one per cent. of the patents granted bring any return to their holders. *Verb. sup.*

ALPHA.—We happen to know for a fact that the pictures which you so justly admire were taken with a single landscape lens. Could we give any better answer to your question?

AMICUS.—The so-called British gum, which forms the adhesive cement on postage-stamps, is really dextrine. It will adhere to glass much better if, in mixing it with water, you add half its weight of loaf-sugar.

ETTA.—Secret processes which are offered for a consideration generally turn out to be as old as the hills. Have nothing to do with them.

OXYGEN.—The action of the manganese in the chlorate mixture is not determined. It is certain that it undergoes no alteration itself. It probably acts mechanically in keeping the crystals of chlorate apart. Ferric oxide or fine sand will fulfil the same office.



# ✻ THE CAMERA ✻

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## Sayings and Doings.



WE have great pleasure in calling our readers' attention to the liberal offer made by the London Stereoscopic and Photographic Company, as intimated in their letter which we print on another page. The Editor of this magazine will, as requested, undertake the duty of judging the pictures, and it remains with the amateurs themselves to select two others to act with him. We therefore cordially invite our readers to send in the names of those gentlemen, living in or near London, who, in their opinion, might be asked to act in this capacity. The proposal to ask each competitor for an entrance-fee of half-a-crown, *which is to be given without deduction to the Photographers' Benevolent Association*, is one which all must approve. The scheme will help a most deserving charity, and will also help those who practise photography as a pastime to remember that there are others who have had to look to it for daily bread, until age and infirmity robbed the eye of its keenness and the hand of its cunning.

\* \* \*

WE have decided to give a gold medal of our own, to be called the CAMERA Medal, as an extra prize at this exhibition. It will be awarded by the judges to the picture—irrespective of subject—which, in their opinion, is of the highest artistic excellence.

\* \* \*

THE question of the authenticity of the Parnell signature, which appeared in the *Times* the other day, is one which we trust will soon be relegated to the law courts for settlement. Should this much-

to-be-desired course be taken, photography will, no doubt, play a useful part in providing for the jury specimens of plaintiff's caligraphy. There is also another way in which the jury could be helped in their endeavour to come to a just decision; and, as this method of enlightening a judge and jury has never yet found place in an English court of law, let us give it publicity. We quote from a New York paper of six years ago:—"During the recent trial of the Whittaker will case in Philadelphia, it became necessary to show the differences between a genuine signature and an imitation or forgery of the same. For this purpose, Dr. Charles M. Cresson brought into court a powerful reflecting magic lantern. The room was darkened, and images of the two signatures, enormously magnified, were thrown side by side upon a screen before the judge and jury. The false signature was at once revealed."

\* \* \*

HERE, then, is a hint for our legal luminaries, by which they can not only forward the ends of justice, but will be able to make sensational trials still more sensational. The crude evidence of forged documents could be pleasantly alternated with dissolving views of the places where the crimes were committed. But, seriously, this method of comparing suspected documents with others is a most valuable one. Let it be observed, that the lantern is not an ordinary one, but a *reflecting* lantern; or to describe it by the title conferred upon it by opticians, but as yet not found in the dictionaries, an "Aphengescope." This mode of examination is, however, most valuable in cases of suspected tampering with figures or handwriting, for the light can be thrown upon the document at an angle, and any abrasion of its surface, by scratching out or by the action of chemicals, is at once made manifest.



It may be remembered that some time ago we cautioned tourist photographers against the pier at Deal as a field for camera work, on the ground that the authorities who govern the destinies of that uninteresting structure levy a toll of half-a-guinea upon any unwary tourist who bears a camera. We spoke from personal knowledge of the matter. Six months have gone by since our remarks appeared, and they now receive corroboration in the last issue of the *British Journal of Photography*. We quote part of what is there printed:—"A short time back an amateur, who was unaware of this nowhere-else-to-be-found regulation, passed on to the pier with a small apparatus, unnoticed by the toll-taker, and had taken two or three pictures, when he was actually compelled by a local photographer, aided, we believe, by one of the pier officials, to draw the shutters of his slides and expose the plates to light, because he objected to pay the half-guinea charge."

+ + +

Now, why should there be this objection to photographing the town of Deal? An amateur of our acquaintance hazards a solution to the problem. He informs us that some time ago a gentleman asked him if it were really true that, by some new plates which had been invented, it had become possible to photograph a *smell*. Our amateur friend fancies that this idea may perhaps have taken hold of the authorities at Deal, and that they are afraid of photographs being taken by this new-fangled process, in case the pictures should reveal too much. Deal is not a beautiful place, nor can it, like Cologne, boast of a wonderful cathedral, but it beats Cologne hollow in the pungency of its odours. Verb. sap.!

+ + +

MR. HARRY FURNISS'S "Artistic Joke," in the shape of a burlesque Royal Academy in Bond-street, is a sight which every one who has anything to do with things artistic should not miss seeing. It is to painting what the well-known "Rejected Addresses" was to the literature of its day. Mannerisms of different artists are here ruthlessly held up to scorn, and the shortcomings of the real Royal Academy are ridiculed in a way which may result in much-wanted reform. The "impressionist" school has been let off lightly in a picture of two ladies whose feet and ankles are in a haze of indistinctness, about which the very cleverly-written catalogue says, "The latest fashion in portrait-painting. Why trouble about finish? Leave everything to the imagination. So clever, you know—and so profitable." We are glad to learn that these pictures are to be reproduced by one of the photographic processes, and published in the form of an album.

## ON MOUNTING AND FRAMING PHOTOGRAPHS.

BY ADA S. BALLIN.



THE object of photographs is, as a rule, to please the eye, and their use for decorative purposes is every day becoming more popular. One would much rather have one's walls hung with good photographs or pictures produced by zincography, the platinotype, or other photographic processes, than with poor engravings, or those maudlin and frequently incorrect water-colour and oil paintings, which are alone within the reach of persons of moderate means. Framed photographs are familiar objects on our walls, mantelshelves, and side-tables, but as a rule these are so badly and clumsily framed, that it is very evident an improvement is needed in this respect.

Mounting and framing is a subject which demands care, attention, and the exercise of artistic taste; and many is the beautiful and technically perfect photograph which is quite spoiled of its proper effect by the slovenly or glaring manner in which it is prepared for exhibition.

The best medium for mounting is, perhaps, liquid starch, carefully prepared, so as to be free from lumps, and used before it has had time to ferment. It should be laid on with a rather large brush, so as to be perfectly evenly distributed, and the prints must be thoroughly damp before they are laid on the card, so as to prevent kinking. After being arranged in position on the cards, the pictures should be placed between the leaves of a large book, with a weight on the top of it, for a few minutes, in order to render them flat and smooth, and this often gives them a nice glazed appearance. If the photographer is able to mount his pictures directly after printing, there is no need to let them dry after the last washing—and, indeed, it is much better not to do so. If the pictures are intended to be framed with broad mounts, they should not be directly affixed to cards of the requisite kind and colour, but to ordinary cards, which will lie behind the mounts proper, as the photograph is so much more effective when surrounded with a suitable mount, the bevelled edge of which fits closely about it, than when mounted flat on a plain card.

The water-colour artist pins his faith to the regulation white mount and gold frame, while the painter in oils is ruled by the custom of setting every painting into a gilt frame, which is supposed to be equally good for all. Engravings always look well with white mounts in dark frames, but no such hard-and-fast rules can be abided by in the case of photographs, with regard to which it



must be remembered that their beauty, since they are, like engravings, monotones, depends entirely on light and shade, and that their effect is spoiled if anything in the frame or mount distracts attention from this. Unlike engravings, however, the tone of different pictures varies greatly, from the cold grey of the platinotype to sepia and warm reddish shades. This introduces a new factor, and not only must the size and proportions of the photograph be studied in relation to those of the mount and frame, but its colour in relation to theirs is a matter for grave consideration. Platinotypes may always be treated in the same way as engravings, mounted in pale grey or white, with or without black or gold bevellings, and framed in dark oak, ebonised wood, or walnut. Walnut frames should indeed be more popular than they are now, and unstained oak, with mounts of the same, may be sometimes advantageously employed in the case of landscapes, where one may be supposed to be looking out of window at the view.

The proper proportioning of the size of the mount and frame to that of the picture is too often neglected. It is by no means uncommon to see a good landscape in which the tops of the trees have evidently been lopped off, or the sky curtailed, for the purpose of forcing the print into a frame some sizes too small for it; and on the other hand, I have seen a gem of a picture in a capital setting, where the whole effect was spoiled by the setting being some three times too large for the gem. Each picture requires such a proportion in its mount as not to distract the attention either by an idea of its being cramped by too small or over-balanced by too large a setting; a sense of disproportion is always unpleasant, and a little picture in a large frame is very like a tiny child in its grandmother's crinoline and bedizenment.

Similarly, when two or more pictures are to be included in the same frame, a certain proportion must exist between both or all of them. If pictures are to be placed close together, they must be on the same scale, and this rule should also be observed when an arrangement is desired in which one picture is to balance the other. It is a serious error to attempt to arbitrarily balance pictures which have no natural relation, and if this is done they only detract from each other's merit. How often have I seen, both in drawing-rooms and exhibitions, frames in which a fine baby was made to balance a grenadier in full regimentals, the top of whose shako reached about to the infant's shoulder; or a dog calmly squatted on its haunches next to a church, which it could have swallowed at one gulp? It is a matter of everyday occurrence to see a well-grown lady with her parasol in one hand jostling a carriage and pair with its occupants, which she could easily hold in her disengaged palm, or a sailor boy playing next to a

genuine storm scene, the wreck in which might well be that of his own toy boat. Such juxtapositions are, of course, ridiculous blunders, but they should not be passed over with a mere smile, for from the point of view of art they are criminal, and tend to injure the taste of the rising generation. A little exercise of that rare faculty, common sense, would prevent the commission of such mistakes even by people ignorant of the principles of art, and they should, therefore, be unhesitatingly condemned when perpetrated by those who lay claim to artistic attainments. Taste and thought must be given by the artist to properly mount and frame his photographs, and in order to show them to the best advantage, he should adapt the setting to the character of each picture.

The tone of the mount should harmonise with that of the picture, and, as it were, lead up to it, and a good plan is to match the mount to the palest tone which is found in the photograph, in which case the light-coloured surroundings seem to focus the attention on the picture. Dead white as a rule has too cold and staring an effect, but a very serviceable mount is cream with gold bevellings.

Gold mounts and frames are generally bad, as by their glare they rob the photographs of half their beauty; but they must not be entirely condemned, as, when the tone of the pictures is warm they may often be used with advantage, and gold bevellings in most cases show a picture off by attracting attention to it. I have seen rather pale pictures killed by a bare mount of the common staring blue, which looked admirable when removed to a deep cream mount set off with a narrow rim of gold. When a pale, rather broad, mount is employed, the frame may be of light oak with a narrow edge of gold inside to match the bevelling, or entirely of gilt. In the case of pale pictures, a bevelling either of gold, black, or maroon is desirable, in order to break the monotone; but it is rarely well to place a dark, warm, picture in a pale coloured mount, as the effect of a dark patch in a light ground is unpleasing. While tabooing everything glaring, some richness in setting is often desirable, and for warm-toned photographs a mount of maroon with gold bevellings, framed in black and gold, is very effective. Dark green may also be used in the same way as a mount, with a dark frame, but I have in my mind's eye some exceedingly good photographs which were so mounted, but the whole effect of which was spoiled by their being placed in light oak frames. Dark flock papers without patterns make good mounts.

When elaborate frames are used, some attention must be paid in order to see that their character harmonises with that of the pictures. Thus a floral design forms a suitable ornament for the



frames of flower pictures, landscapes, or portraits, but is unsuitable for sea-pieces and architectural subjects, to which scroll-work frames would be more appropriate.

Various shades of red may be utilised with advantage in mounting and framing, while terra-cotta harmonises excellently with sepia tints. The common red plush frames, which we see in every stationer's window, are as effective as needs be for portraits, and the same material may well be used for wall frames. It can easily be stretched over a common deal frame, made by a carpenter to the requisite size, and is very rich looking, although in reality quite inexpensive. I have seen photographs look extremely well when mounted in vivid red plush with a narrow rim of gold surrounding the picture, and as an edge to the frame, which was of light oak. Photographs on glass or porcelain show to advantage when framed in plush, without any other mount or decoration, and for the purpose various shades of red, green, old gold, peacock and electric blue, brown, and terra-cotta may be used. Different shades of fawn and pale brown plush or velvet make effective frames for darkly-tinted photographs; but the disadvantage of selecting very light colours is that they soil so soon, for nothing seems to "catch the dirt," as an old cook of mine used to say, more than velvet or plush.

Some months ago a London firm introduced the fashion of decorating table frames of plush with the skins of little kittens, stuffed to look exactly like life; perhaps two would be placed on one frame, the one chasing the other over the top, and many frames so ornamented may still be seen in the shop-windows, as well as others on which are perched little bright-eyed squirrels. I must say the effect is very pretty, and has been largely imitated. I have seen in drawing-rooms, plush frames on tables with one of those cheap green frogs, a model crab, a stuffed bird; or in one case an *octopus* wonderfully imitated in india-rubber, perched on the corner. The effect in the former case, though certainly not in the latter, was rather pleasing in its quaintness, and a model butterfly, fastened with outspread wings to the frame, as if it had just fluttered on to it, looks very pretty; but I cannot say the same of two large owls which I saw on a plush panel frame in a window not very far from Piccadilly, where other ungainly fowl were disporting themselves in similar positions on frames far too small to have supported their weight had they been really in the flesh.

I have recently seen some large photographic reproductions of pictures for wall-decoration sent from Germany, magnificently framed in ebonised wood and gold; no mounts were visible in these, the broad inner margin of the frame covering the

edge of the photograph. The effect is exceedingly handsome, but such frames are expensive to buy and more difficult to make than plush frames. A German friend of mine has some large photographic pictures on her walls, framed in deep, square-cut wooden frames, covered with either dark green or dark red plush. Such frames, as I have said, are easily made at home, and always look nice if neatly finished.

A still cheaper way is to cover the woodwork with tightly-stretched sack-cloth, which has then to be painted in oil colours, evenly laid on all over; for platinotypes, stone grey or sage green is a very good colour for the frame, and for other photographs any colour that goes well with the picture and the paper of the wall on which it is to be hung may be used. A narrow bevelling of gold round the inner margin of the sack-cloth frame is a great improvement. With frames of this sort, a mount is hardly necessary, but if one is used it should be of a tone rather paler than, but which harmonises with, the frame. A white, or even a cream, mount looks very bad intervening between the picture and a dark-toned plush or sack-cloth frame.

Very cheap and effective frames may be made by covering the woodwork with Japanese embossed leather paper, which can be had in all colours; the imitation of old gilding, with its curious lines and figures, makes very handsome frames. I saw quite recently an oil painting framed in this way, which looked exceedingly well. With frames made thus, a piping of plush or velvet round the inner margin enhances the effect of the picture. If due regard is paid to artistic effects, a great deal of variety may be introduced into photograph frames; and such variety is desirable, for if photographs are largely adopted for wall decoration, they are apt to give an impression of too much sameness, and a variety in the size, shape, colour, and materials of their frames breaks the sense of monotony.

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CORPORATION ART GALLERY, DERBY.—SUMMER EXHIBITION, 1887.—It is intended to hold an Exhibition of Photographs in the above gallery in June, July, and August next. The exhibition will open about June 20, and close Aug. 20; and works will be received at the Art Gallery on Monday, Tuesday, and Wednesday, June 13, 14, and 15. The committee will award gold, silver, and bronze medals, and certificates of merit for the best works by professionals and amateurs. Jurors will be appointed to make the awards. All works must be sent, carriage paid, addressed to the Art Gallery, Derby. A form, which can be obtained from the Curator, Mr. W. Crowther, should be duly filled up, giving all information as to titles, &c., of pictures sent, for the catalogue, not later than Saturday, June 4, and necessary labels, &c., will be forwarded to applicants immediately on its receipt.



## STELLAR PHOTOGRAPHY.

## II.—PHOTOGRAPHY AT THE CAPE OBSERVATORY.

BY C. RAY WOODS.



IN my previous article on the above subject I attempted to describe, in detail, the actual work that was being done at that time at the Cape Observatory, and the methods by which it was being carried out. The

but not before a useful piece of work had been accomplished with it. Each and every overlapping square comprised in a circle having the South Pole for centre, and its circumference the parallel of stellar latitude 33 deg. from the Pole, has been photographed in duplicate. When the last negative in the aforementioned space was successfully developed, the—at that time—newly-arrived instrument was mounted, and, after a number of mechanical difficulties had been overcome, was at last ready for use.

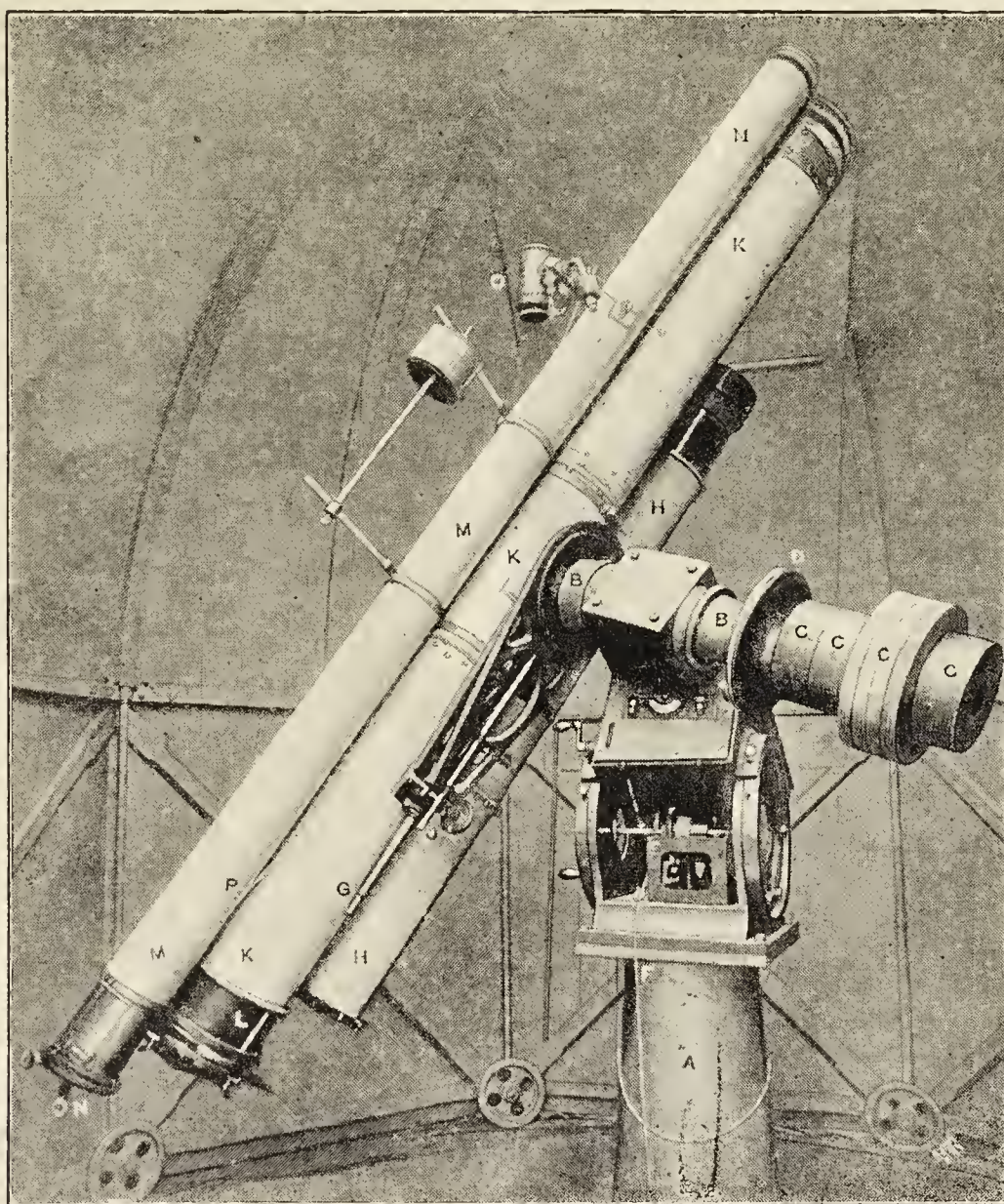


Fig. 1.—Instrument used for mapping the heavens at the Cape Observatory. A, base of Grubb equatorial stand; BB, chamber containing declination axis; CCCC, weights counterbalancing telescope, &c.; D, fine declination circle; E, driving clock; F, cords for correcting driving of clock; G, telescope for reading rough declination circle; HH, Dallmeyer lens and camera tube; KK, Grubb lens and camera tube; L, focussing scale; MM, observing telescope; N, diagonal eye-piece; O, lamp for illuminating cross-wires; P, cords for regulating illumination.

instrument in use was, I stated, of but a temporary character, and was to be replaced by one of more elaborate construction. The wooden-box and Dallmeyer lens, shown in the illustration on page 113, has for some months past been dismantled,

In this instrument, or rather, set of instruments (Fig. 1), the most noticeable, from its size and central position, is the nine-inch telescopic camera; but it is the smaller one that first claims our attention, as its results, being a continuation of the



work already partially accomplished—the formation of a “Durchmusterung” or star catalogue of the Southern Hemisphere—will first be taken in hand and published. The lens of the Dallmeyer Rapid Rectilinear form is of about six feet focal length—rather longer, that is, than the old one; and has, in consequence, on a six-inch plate, a somewhat smaller angle of view, necessitating, therefore, a slightly larger number of exposures. The difference in scale of the pictures taken with the old and the new lens is of no real consequence. The measurement of the star distances, &c., and formation of a star catalogue, is the principal thing to be got; and even if we look upon the negatives as a simple record, of no immediate utility, of the present state of the heavens, the difference in scale is still of no practical importance, for the maps could not be conveniently issued in one large jointed sheet, and would serve no more useful purpose in that state. To the popular mind, whose idea of a star-picture goes no further than a photograph of the heavens stuck on a bit of cardboard, it would seem that the proper way of treating the results should be to stick and fit all the overlapping squares together. Imagine them all neatly fitted in that fashion, and the result of the whole celestial sphere would be a patchwork paper-globe of twelve feet in diameter, as useful as the maps in, and atlas pasted over, a small balloon. So much for the popular notion, then, which I am glad to have an opportunity of dispelling here, even though it breaks the continuity of my description.

To resume. The focussing of the Dallmeyer lens is effected by screwing it in or out of the brass mount that attaches it to the rigid brass tube that takes the place of the body of the camera. A scale is attached, so that the exact focus may be obtained if anything occasions alteration or disadjusting of the instrument. At the other end of the tube there is an attachment to carry the dark slide, this attachment having adjusting screws for centring this camera with the larger one. The dark slides to both cameras are alike, and will be described later on.

The larger lens—a very fine glass by Grubb, of Dublin—has an aperture of nine inches and a focal length of nine feet. It is, like the Dallmeyer lens, corrected for the chemical rays, but being of the single achromatic form, like an ordinary telescope objective, necessarily embraces a smaller angle of view, in proportion to its aperture and focal length, than does a rectilinear, and the plate used, therefore, is only six inches square, the same size taken by the shorter focus Dallmeyer. The focussing arrangement, designed by Dr. Gill, is of an ingenious and somewhat novel character. A short piece of steel tube has cut into it three inclined planes (see Fig. 2).

This tube is free to move round another some-

what longer tube, which slides into the long telescope-tube carrying the lens, and is firmly drawn up to it by three strong springs. The inclined planes rest on three points attached to the telescope-tube. The ring, with its inclined planes, moreover, is capable of being revolved by means of a tangent screw, and the dark slide or ground glass is brought in or out as occasion may require. As the dark slide is always carried on three points, which can only be *equally* lengthened or shortened, the plate must always, therefore, be *square* with the lens, provided, of course, that the lens is properly adjusted to begin with. This instrument also, it need scarcely be said, is provided with a focussing scale.

A word may not be out of place here as to the method of focussing. The approximate focus is first obtained visually. A plate is then put in the dark slide and a series of exposures are made at various distances on each side of the visual focus, the object of exposure being a star taken while the instrument is standing still; the star will, as it moves, leave a track on the plate. The focus of the sharpest image of the star-track is taken as the

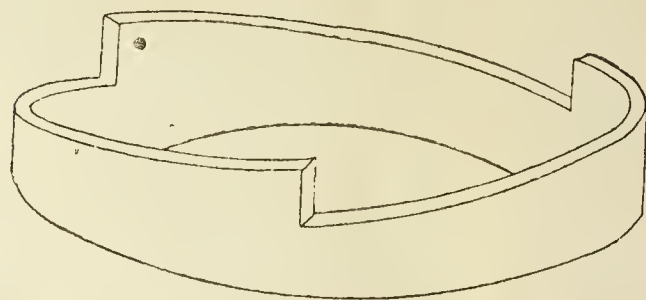


Fig. 2.—Three inclined planes cut on steel ring.

centre of a new series of exposures at shorter scale intervals, and so on, till the sharpest line possible is obtained. It is scarcely necessary to tell the photographic reader that absolute achromatism in a lens is as yet practically unattainable, more especially with those rays that act on the sensitive film, the spectral range of which is greater than of those that effect the retina; a certain amount of what photographers call “depth of focus” exists. Several star-track lines may appear equally sharp, in which case the line whose focus is *nearest* the lens is adopted as it will be better for the images near the margin of the lens than a more distant focus would be. In fact, the focussing is carried out on exactly the same principle that we adopt in the studio or field, but it is carried to as refined a pitch of accuracy as the defining power of the lens will admit.

The dark slides are made of metal, and the plate rests on three platinum points shown in Fig. 3.

Further, the plate is *oriented*, or, to use a term more familiar to the photographer, *registered*, by



being pressed by springs against small metal cylinders at two adjacent edges of the plate.

The third and narrowest tube shown in the photograph is the observing telescope, which carries at one end a good, though ancient, "Dolland" lens of 5 in. aperture, and at the other end a micrometer, the function of which has been stated in the previous article. This micrometer, in addition to the ordinary eye-piece, has what is called a "diagonal eye-piece," which, containing a right-angled reflecting prism, enables the observer to work with greater ease.

The iron framework of the observatory, within which the instrument stands, was covered with canvas only when it was used by Dr. Gill in his expedition to Ascension; but since its erection in the grounds of the Cape Observatory it has been substantially covered with wood with canvas over it. The dome, or rather the whole structure, is supported on wheels which run on an iron ring fixed to the octagonal

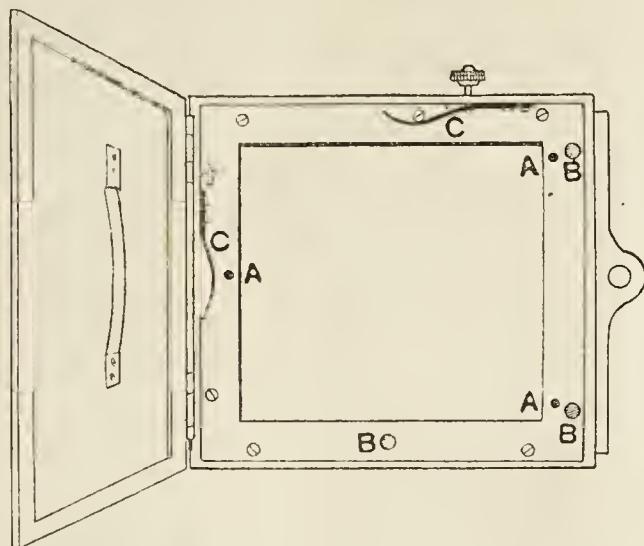


Fig. 3.—Metal dark slide: AAA, platinum points on which plate rests; BB'B, cylinders against which plate is pressed by means of springs CC.

foundation, so that the instrument can be pointed to any part of the sky.

To sum up. We have here the smaller lens for mapping the Southern heavens on a scale similar to that of Argelander's "Durchmusterung" of the northern hemisphere; and, by means of overlapping squares, giving a complete survey of the Southern hemisphere, but showing a larger proportion of stars than Argelander contains. In addition, we have a larger lens taking in a smaller area, the central portion of each square giving a means of determining the general distribution of the smaller stars, and also capable of refined work on nebulae, star-clusters, &c. Again, these nine-inch lens pictures will form a foundation for a complete mapping of the celestial sphere on a larger scale than the work just now in hand. Our chief aim at present is the *comparatively* unam-

bitious task of producing—what is greatly needed at the present time—a first-class working catalogue of the Southern hemisphere; but it is at a much smaller cost than can be done by other than photographic means, and in addition, a future generation will have at its disposal an unbiassed record of the state of the southern skies at the close of the nineteenth century. Future astronomers will be able to refer to our actual negatives with the confidence that they are as well able to see the skies of previous centuries as if their existence had been correspondingly antedated.

A specimen is given of the work which the Grubb lens is capable of performing. It has been enlarged about two and a-half diameters from the original negative, and represents a portion of the Milky Way in the neighbourhood of Eta Argus, on a scale of five inches to a degree. The original negative was exposed for two hours forty-five minutes, and the largest spots on the picture represent stars of about the sixth magnitude. What magnitude the smaller ones represent I will not undertake to say. It must not be supposed that this illustration is an average specimen of the Cape star maps. It is essentially, like many of the star-photos hitherto placed before the scientific world, a "show picture," though that does not lessen its value as a correct representation at the present epoch of an interesting and important region of the Southern skies. Many of the Cape photos—the larger proportion, in fact—only show, perhaps, one or two stars for every hundred in this one; but that is the fault of the stars, not the photos. In mapping the heavens all photos must really be regarded as of equal value. It is as necessary to map the barer regions as it is to map those regions rich in stars, if we would form an adequate conception of "our universe," just as our notion of "our world" would be valueless were we to take them solely from densely-populated centres, leaving the ice-bound Poles or tropical wildernesses out of consideration.

The star Eta Argus is the centre of a bright nebulous patch, situated close to a dark space, known as the Coalsack. Looked at through a good telescope, the brilliant mass is divided up into separate stars, though, as will be seen on looking at some irregular blotches, if I may use the term, in the illustration, the magnifying power necessary to separate some of the stars is very great—greater than our nine-inch glass will accomplish on a plate during a night of ordinary definition. In addition, however, to the cluster of stars, there is also a mass of true nebulous matter not shown in the illustration, although it appears faintly in the original negative. The star Eta Argus was first observed by Halley in 1677, and he noted it as of fourth magnitude. Sir John Herschel frequently



observed it from 1834 to 1837, and has left us a drawing of the surrounding region, with an interesting account of his observations. In 1834 its brilliancy lay between first and second magnitude, and remained stationary till November, 1837. But on Dec. 16, in the latter year, says the great astronomer,—

“My astonishment was excited by the appearance of a new candidate for distinction among the very brightest stars of the first magnitude, in a part of the heavens with which, being perfectly familiar, I was certain that no such brilliant object had before been seen. After a momentary hesitation, the natural consequence of a phenomenon so utterly unexpected, and referring to a map for its configurations with the other conspicuous stars in the neighbourhood, I became satisfied of its identity with my old acquaintance Eta Argus. Its light was, however, nearly tripled. \* \* \* \* \* The only star, Sirius and Canopus excepted, which could at all be compared with it was



Fig. 4.—Key to star-map. Eta Argus marked by a cross, being the smaller of the two stars that run into one another. S, N, p, f, mark the South, North, preceding, and following points of the sky.

Rigel, which it somewhat surpassed. From this time its light continued to increase. On Dec. 28 it was far superior to Rigel, and could only compare with Alpha Centauri, which it equalled, having the advantage of altitude, but fell somewhat short of it as the altitudes approached equality. The maximum of brightness seemed to have been obtained about Jan. 2, 1838, on which night—both stars being high, and the sky clear and pure—it was judged to be very nearly indeed matched with Alpha Centauri, sometimes the one, sometimes the other, being judged brighter; but, on the whole, Alpha was considered to have some little superiority. After this, the light began to fade.

In 1843, however, it again appeared brighter than Canopus, and was even at one time almost equal to Sirius in brilliancy. The late Sir

Thomas Maclear, a former Astronomer Royal at the Cape, remarked, in 1844 :—

The changes in Eta Argus are curious, for last April twelvemonths it seemed almost equal to Sirius. Now the light of the star is stationary, and scarcely so bright as Canopus.

It was still of the first magnitude in 1845, but it gradually declined, and its present insignificant condition may be noted from the small key-map (Fig. 4), where Eta Argus is pointed out by cross lines.

Nor is this all. Within the last fifty years the nebula itself has altered—some stars have disappeared and others have sprung up. What further changes will take place? Here is a photograph of it taken in January, 1887. Depend upon it this is not the last photographic record that will be taken. Such marvellous alterations have not been noted in any other part of the heavens, and so long as any photographic work at all is done at the Cape Observatory, photos, once a year at least, if no remarkable visual alteration is noted necessitating more frequent exposures, ought to, and doubtless will, be made. It will be interesting, even to the unaccustomed mind, to observe what must inevitably be demonstrated—the vast superiority of the photographic over the visual method of recording stellar conditions.

## A JAUNT IN SPAIN.

BY “ANDRIE” PRINGLE.

(Read before the Edinburgh Photographic Society.)



R. CHAIRMAN, PRESES, MODERATOR, CONVENER OR PRESIDENT, AN' KIND SIRS A',—Ye'll maybe hae mind that twa-three years syne I wrote ye a letter in the auld Scots tongue about a jaunt I was takin' in Italy, the land o' bawbees an' beggars; an' the nicht I'm gaun tae try to gie ye a bit glint intae Spain, the land o' bulls and biggin's, and maybe o' a guid when *blethers*. Aye! there's a gey lot o' bletherin' about the land o' Spain, about the bonnie wenches wi' their black een an' their bits o' wee moustaches, an' about the bauld men that gangs bare intil a ring tae fecht wi' a mad bull o' Bashan. But let that flee stick tae the wa' for a wee whiley.

Ae day a Doctor an' me started in a fuffin' boat frae Liverpool, intendin' tae veesit an' potygraph in this fine land o' Spain. At first the maist feck o' the folk was awfu' keen o' their beds, an' had a sair ill-will at the ship's kitchen, an' the Doctor had an' *awfu' sair tooth*, and I fand I needit a very lang fork tae wrax a bit o' scone tae my nearest neebor at kail-time; but after a day or two the wather kind o' settled, and the ladies took to





Fig. 5.—A portion of the Milky Way round the star Eta Argus, taken with a nine-inch Grubb lens on a Paget plate.  
Exposure, two hours and forty-five minutes, Jan. 5, 1887.



*sketchin' an' writin'* on deck, instead o' *retchin' an' skytin'* about the deck, as they had dune afore. But ye ken the langest pudden that ever was had an end somewhere, sae at last we landet at Gibraltar, the maist kenspeckle place in its way I ever saw. It's juist a great muckle rock stickin' up intae the air, wi' a lang sharp face and flat sides, juist like a big razor, in fact, lyin' wi' its edge upmost, an' a' alang the sides ye can see holes wi' guns stickin' oot; and below the guns a gey bonnie wee toon, langer than Kirkcaldy; and below the toon, ower the sea, or close till't, biggins for mair guns. Mercy! if they was firin' a' thae guns at once there wadna be a midge left within a hunner miles. An' mind ye, thae guns is made tae fire; they're no like Mons Meg, and the sodgers aye keeps their pouthers dry; they get it a' fresh every 'ear frae hame. They're no to be bounced on at Gibraltar, I can tell 'ee! There's an awfu' lot o' sodgers aye at Gibraltar, an' eight hunner guns, an' a wheen monkeys. Thae puggies leeves in holes about the tap o' the hill, an' ae day they cam' oot for a bit daunner when I chanced tae be near. There was the faither puggie, and the mither, an' a fine hantle o' wee anes; an' thinks I, "Noo's your time, Andrie," but na faith! I had speelt up a steep bit o' rocky brae, and was pechin' sair wi' want o' breath, an' I had my picter a' ready tae put in the plate, when the puggies got sicht o' me, an' whuff! they were awa like the win', an' sat lauchin' at me, an' scartin' their wanies, in the mooths o' their holes far away. That was an end tae my puggie-potygraphs.

Ae day we thocht we wad gang an' hae a bit look at a wee *linn* no very far awa frae Gib, but we had tae cross the Bay in a stinkin' ferryboat, and then ride twa or three miles on cuddies. The cuddies was maybe weel eneuch, but losh preserve me frae their saddles! They juist stack on about half-a-dizzen tattie pokes for saddles, and they garred us striddle sae wide that it was days afore the Doctor an' me could walk onything like human bein's. Princes-street wadna hae been braid eneuch for us! An' after a' the linn was but a bit dribble o' water like mony a ane hereabouts.

Ae afternoon we left Gibraltar wi' a great fine man for guide an' courier. We ettled tae gang tae Malaga, but as it was maist awfu' wild the boat that was tae tak' us never cam frae Cadiz. Sae there we war, cobbled up in a dirty wee cauld public in Algeciras, and could neyther get back nor forrit. Sae the courier says, "What for no tak' the coach at four in the morning, and drive tae Cadiz?" Says I, "What for no?" Sae at four we set off in a ramshackle auld "dilly," me an' a half-daft Frenchmen in the thing they ca' the "coupy," and gey *coupy*-like it was. This Frenchman fair deaved me with his constant clatter; he blethered away sleepin' an' waukin', and was aye eatin' wee pills o'

arsenic, what for I dinna ken; they say arsenic is guid for the wind; if sae, he needit a' the pills he took, for he wastit routh o' win', nae doubt. When I got a change intae the back pairt o' the 'bus I thocht I wad be a' richt, but na! there was a lassie sea-sick—ou aye, juist bowkin' sea-sick! She cam' frae the north o' Africa, and had never been in a carridge afore, nor seen a brig, and she was baith sick and awfu' frichtit for the brigs. She had awfu' bonnie een, and was just about sweet saxteen—that's pottery, an' its true tae—an' sae I was willin' tae forgie her sickness, and did what I could—in guid Scotch—tae comfort her a wee. The folk tell't me the Doctor had been maist attentive tae the lassie wi' his brandy flask. He wadna forget hissel' eyther, I daur say!

At last we got till Cadiz, but it was rainin' an' blawin' maist fearfu'. Next day we gaed an' lookit at a lot o' picters, but couldna potygraph ony till the day after, when it was braw an' clear, but a terrible strong wind. Hooever, I got a view of the toon promenade, an' anither o' the big kirk, frae a wall that gangs clean roond the toon on the river side. The wind was blawin' the water like fury against the wa', and I took the view that quick that I hae catched the very gulls in the air. The same day, I think it was, we gaed tae Seville, a very braw toon. We landed there at half-past seven at nicht, and me and the courier started oot after a snack tae see the cafés, as they ca' their public-hooses. Mercy me! sic coffee! I never tastet onything that stack tae my ribs like the Seville coffee. I could drink an ocean o't. We saw the men that makes their leevin' wi' fechtin' the bulls. They're maistly fleshers' 'prentices got up in life, as I was tell't. They wear wee pigtails o' hair ahint their heads, and they hae a way o' their ain o' wearin' the "capa," or cape that a' Spaniards carries. We likewise gaed to see some gipsy dancing; it was gracefu', or *dis*-gracefu', accordin' as ye are auld or young. But the petticoats was lang eneuch, doon tae the cutes, no like the pantomime lassies.

The cathedral at Seville is a grand buildin' a'thegither—grand columns, grand gildin', grand wud, and grand jewels an' claes o' the priests. An' it was here I got my first sicht o' Moorish architecter. It's fair amazin'. It was at the Alcazar we saw this, an' it's nae use me tryin' tae give ye ony kennin' o' what it's like, for I canna do't. Of a' the toilsome, intricate, but elegant and beautiful decoration I had ever seen, some o' the rooms here beat a'. I took twa or three views in here, but I maun let ye see them some day on the big clout wi' Mr. Trummule's magic-lantern.

What wad ye think o' sax thoosand women a' makin' cigars at ae time? That's what we saw, though, an' it's a guid thing I didna ken muckle o' their lingo, for the little I did unnerstan' was na



complimentary eyther tae the colour or the theekin' o' my head !

An' ye'll want tae hear aboot the bull ring. Aweel, it's very like Sanger's Circus without the cover. The sides o' the ring are maybe four feet high, sae that ony ane can spring oot o' the road if the bull should chance tae look at him. An' there's a kind o' dark-room-ventilator-thing that a man can slip 'oot o', but a bull canna ! There's a surgical operatin' table, complete wi' a' the latest patents, and a wee chapel where the bull men say their prayers afore showin' off their braw claes, and a kennel whaur they pit bull-dowgs tae worry at the heels o' a bull that winna fecht. Men ca'ed picadores rides auld screws o' horses on tae the bull's horns, sae as tae let as muckle baith intoe and oot o' the horses as possible ; but the men has on metal armour, and keeps o' the licht they can oot o' theirsels. But mind, sirs, I didna see a fecht ; if I had I wad hae brought ye some instantaneous views. I'm gaun tae try't some day if we're a' spared. Maybe it's mair dangerous than fox-huntin', but I doot it.

Frae Seville we gaed tae Cordova, said tae be the first paved toon in Europe. I quite believe this, for I could see the original *cassies* there yet. It's an ill-lookin', dreich place when first ane lands there, but, my certes ! it's grand when ye ken the richt bits tae gang till. There's an extraornar' fine view frae the far side o' the water across an auld Roman brig. But the wonner is the Moorish mosque. Like maist mosques, this ane has a very bonnie coort-yaird, wi' fountains an' orange trees. But it's the inside that dings a'. What dae ye think o' eicht hunner an' fifty columns, a' marble an' ilk ane different frae its neebor ? It's sic a size that there's a fair-sized kirk clean lost in the middle o't. When the mosque was new it was like a' Moorish wark, real splendid wi' decorations at the taps o' the pillars ; but what does that daft donner-headed carle Ferdinand dae but plaister and whitewash a' the fine things up, the ill-faured loon ! juist for jealousy o' the Moors. The whitewash an' stuccy has been ta'en off some o' the pillars noo, and I got a pair o' gey nice views in the inside. But eh, whow ! it was cauld and damp in that place. I had tae keep my hankie tied ticht ower my head, for of coorse ane canna wear a bonnet in a kirk, even tae keep oot the cauld.

Our next veesit was tae Granada. Noo, I maun stop a wee an' tak' breath afore I say aucht aboot Granada, or, mair preceesely, aboot the Alhambra, as it's ca'ed. Maist folk think the Alhambra is a palace. Weel, there *is*, nae doot, a palace, but a'tweel there's a heap mair. There's twa or three palaces, and dear kens hoò mony tooers, an' there's woods an' walks an' a'. The Alhambra was juist a garrison tò haud and vittel 40,000 men. The

hail thing is that beautifu' that it's nae use me wastin' time tryin' tae describe't. The views frae the wa's ower the plain, ower the toon o' Granada, awa' tae the snawy hills, is fair fit tae dumfounder a body. The auld palace o' the Moors is the finest thing aboot it—fountains an' gracefu' pillars, and the very perfection o' carvin' an' colours. An' a' sae satisfeein', no ower muckle, but juist eneuch. It's astohishin', too, the colours has lastit a' thae centuries, especially in the Ha' o' Justice, as they caa't, where there's a heap o' hingin' arches, something like stalacites that ye'll whiles see in caves, or aneath an auld brig. Here ye can see a room whaur an auld deevil o' a Moorish king cuttit off the heads o' thirty-twa o' ae family for meddlin' wi' the affairs o' some o' his wives—an' serve them richt for being sae daft as tae meddle amang women ; the maun hae lost their heads afore as well as after ony sic fuilishness.

After about a week at Granada we gaed tae Malaga, and nae doot ye ken that Malaga's a grand place for raisins. It's a grand place for *ither* raisons. The soil is maist awfu' rich, an' grows sugar canes, and the finest oranges ever I tastit. It fair makes my mouth water tae think o' thae oranges. The best Swede turnip that ever grawed was awm tae thae oranges. The earthquakes had dune awfu' damage tae the toon, for it had coupit a hantle o' the hooses in the vera middle o' the toon. But maybe it was a' for the best, for the hooses was that close an' the streets that narrow that it micht hae been a guid thing tae wale a wheen o' them oot. After a wee while in Malaga, we sailed in a French boat back tae Gibraltar, and frae there in the same boat ower tae Tangier. Ye never saw sic a change o' scene in three hours frae ceevilised Gibraltar tae that uncanny, dirty, auld-world place, Tangier. Eh, sirs ! sic a clattet, sic a Babel o' tongues, sic yellin' an' roarin' as thae barbarian boatmen made aboot the landin' o' us puir folk. There was a gey bit o' wind on, an' a bit jaup o' rain, and afore we got landit we were fair drookit wi' the rain an' the splashin' o' thae madmen's oars. Hooever, we got tae a very guid clean howf, an' startit tae hae a look at the toon. *Toon* did I say ? Weel, it's a lot o' hooses on the side o' a brae, and the streets is a' wummly, like corkscrews, an' paved with great big stanes. An' eh, the smell when a Moor passed ane ! It was fair awfu' ! After denner the first nicht we thocht we wad gang and hae a look at a Tangier public-hoose, and hear a Moor's concert. Sae oot we sallied, convoyed wi' a sodger carrying a can'le-lamp.

When we got tae the café—no the ane in Register-square—we fand a heap o' Moors sittin' on their hunkers a' roond the wa's—a kind o' *Mooral* decoration—smokin' "kif," which ye maun ken is a kind of opium, an' gey daft some o' them



lookit, booin' back an' forrit, their een a' glazed, an' a kind o' wauflauch on their lips. They were playin' on stringed instruments like guitars an' fiddles; ane had a real fiddle—I daur say they had a' *Scotch* anes—but this chiel wi' the fiddle held the bow atween his legs an' scrapit it wi' the fiddle. Anither ane gied us a solo on a thing like a wudden spoon wi' twa strings, but afore he got started he broke his strings sax times, tae the great delicht o' his neebors.

Next day we had trysted a snake-charmer, an' I'm glad he could charm snakes, for deil anither thing could he charm that I ken o'—an ill-lookin', waur-smellin' rascal as ever I saw. He tossed his head aboot, an' shook his lang, creashy hair, an' crooned, an' girmed, an' a man wi' a tambourine was duntin' awa' at it a' the time. A doctor in

## SOME STUDIO NOTES.

BY "DEXTER."



I was at Brighton, in the old days of the daguerreotype process—I hardly dare think how many years ago—that I first made my way into a photographic studio. What a mysterious place it seemed to me. There was a skylight, of course; and underneath it were two platforms—scaffolds they seemed to my juvenile mind, one of which was destined for the sitter, and the other already occupied by the camera. There was no symptom of adornment about this room. It was solely a workshop in which pictures could be manufactured, and it had nothing within it to take off something of its bare



The Reception-room.

my company said the stings were oot o' the snakes, but when I askit him tae bring ma ane tae let me see its mooth he said he wadna dae't. Maybe he hadna tossed his head eneuch! Onyway I potygraphed the charmin' performance, ran awa', got till Gibraltar again, sailed hame in anither boat wantin' baith bath an' smokin'-room, got the warst cauld in my head I ever had in my life, got hame, developed some no ill negatives, and wrate this story for ye, hopin' tae help ye tae pass some nicht when for ance ye might chance tae be slack o' mair important business.

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MESSRS. HINTON, of Bedford-street, have introduced a metal case for holding a stoppered bottle, which will be useful to tourists who develop their plates *en route*. The case is so arranged that by no possibility can the contents of the enclosed bottle escape.

ugliness, and make it less like the torture-chamber that it was. For it must have been torture in those days to wink and blink in front of the lens for minutes, instead of for seconds, as we do now; and a visit to the photographer's must have been almost as trying an ordeal as one to the dentist's. The hackneyed injunction, "Try and look pleasant, Miss," would have been as much out of keeping in the one place as in the other.

But we have changed all that now. The modern photographer knows full well the importance of making a good impression upon his clients when first they enter his reception-room; and many of these rooms are decorated with the utmost luxuriance and good taste. This does not represent wasteful extravagance. The sense of bodily comfort and ease has an immediate effect upon the visitor, and he or she is sure to reflect some of that inward sense of comfortableness in the coun-



tenance. With such a feeling, all idea of nervousness is banished, and the coming portrait is likely to be a success.

These thoughts were suggested to me as I read lately in the pages of that capital magazine, *The Philadelphia Photographer*, an account of the new studio belonging to Mr. P. H. Rose, of Providence, R.I. By the kindness of Dr. Wilson, the editor, the two autoglyphs by the Moss Engraving Company, which illustrated that account, are now placed before the readers of the CAMERA. One represents the reception-room—which, by the way, is reached by an elevator—and the other the studio, which opens out of it.

Here is luxury indeed! The place looks like one of those Royal pavilions erected at the late South Kensington Exhibitions, rather than a photo-

from the perusal of a little French book, which is not commonly known to English readers,\* and from which, I think, can be gleaned some valuable hints.

In the opening, the author points out how those who are desirous of improving themselves should compare their work and manner of working with that of others in the same field. He notices that the various books now before the public—although they treat of everything relating to photography—are reticent upon the subject of lighting the living model. To this one thing he has given much study, and his book is offered as a *résumé* of all that he has learnt, read, marked, and inwardly digested about the lighting of the subject. He rightly argues that perfection in all other respects will avail nothing without a close study of



The Studio.

grapher's reception-room. We are told that all that excellent taste and artistic judgment can suggest in the way of furniture and draperies has been here supplied. The floor is thickly carpeted; the walls are lined with Lincrusta-Walton in gilt, broken up with broad lines of red wood; the ceiling is moulded into intricate patterns; and a subdued light is admitted through stained glass, softened by delicate hangings of various tints. From this fairy-like place visitors are ushered into the studio proper. The nature of this room is fully indicated in the annexed picture, and photographers will be interested in observing certain points of departure from English ideas upon this subject, notably the arrangement of the skylight.

The consideration of this new studio serves me for an informal preface to a few notes which I have jotted down concerning studio arrangements generally, and which have been suggested to me

capricious behaviour of light. A study of it is more difficult far than mere posing, and it is when posing and lighting are jointly studied and considered that the true artist becomes apparent. While he does not give any detailed directions for studio construction, he remarks that they are mostly built with a roof too high, and that in many cities, but especially in Berlin, low-pitched roofs are being more and more employed.

M. Klary makes some very pertinent remarks relative to the use of the side-light, and the many cases in which by some photographers it is used injudiciously or in too great quantity. From this cause the beauty of the eyes is seriously imperilled, and, while the natural shadows are partially destroyed, the features become enfeebled, ill-defined, and even deformed. The mouth, for

\* "L'Éclairage des Portraits Photographiques." Par G. Klary. Sixième édition. Paris: Gauthier-Villars.



instance—which forms so important a key to the general expression of the countenance—loses much of its charm. The delicate shadows which mark its corners disappear, the lighting of the lips is spoilt, the shadow beneath the lower lip disappears, and the general effect becomes flat and blank. In heads and busts this preponderance of side-light is not really wanted, although in full-length figures it may be necessary. This extreme use of side-light was more in vogue in past times, when sitters were nearly always placed in one stereotyped position, with the light in one particular direction. The Rembrandt effect represented a great step in advance, and the advantages of varied positions soon became evident.

In the illumination of the model in the studio the light should be balanced in just proportions, the time of exposure being just sufficient to bring out the lighting, and the developer should be modified to suit the exposure given. Looking at a face exposed to a side light, we find that one-half is fully lighted, whilst the other is in such semi-darkness that we cannot, on looking at the focusing-screen of the camera, discover the details without straining our eyes. But if the lighted side be shielded by a card, which may be held for the moment in the sitter's hand, the shadowed side of the face seems to become suddenly transparent, and we now easily see details which before were invisible. This tells us plainly that the shaded side of the countenance was not in actual darkness, but appeared to be so, from violence of contrast. It should be our aim to modify this contrast, so as to rob it of its crudeness. No part of the face ought to be represented as white—some parts appear to be nearly so—but they are never totally white. The whole countenance should be more or less shaded, but luminous touches should be lightly thrown upon the more prominent portions, such as the nose, the brow, the chin, &c. The pictures of our best painters can give us much silent instruction upon these points.

In photographic portraiture three forms of lighting are at our disposal—diffused, direct, and reflected light. The first-named should be employed in the greatest quantity; but, if employed alone, will render the face flat, insipid, and without vigour. It is then that direct light comes to us as a corrective, to light up the prominent features in the way already advocated. But this latter must be employed with intelligence, and in small quantity. The relative degrees of light and shade should never become a matter of chance and hazard, but should always be the subject of careful study. Each different sitter will require different treatment; it is, therefore, quite impossible to lay down any general rule for all comers.

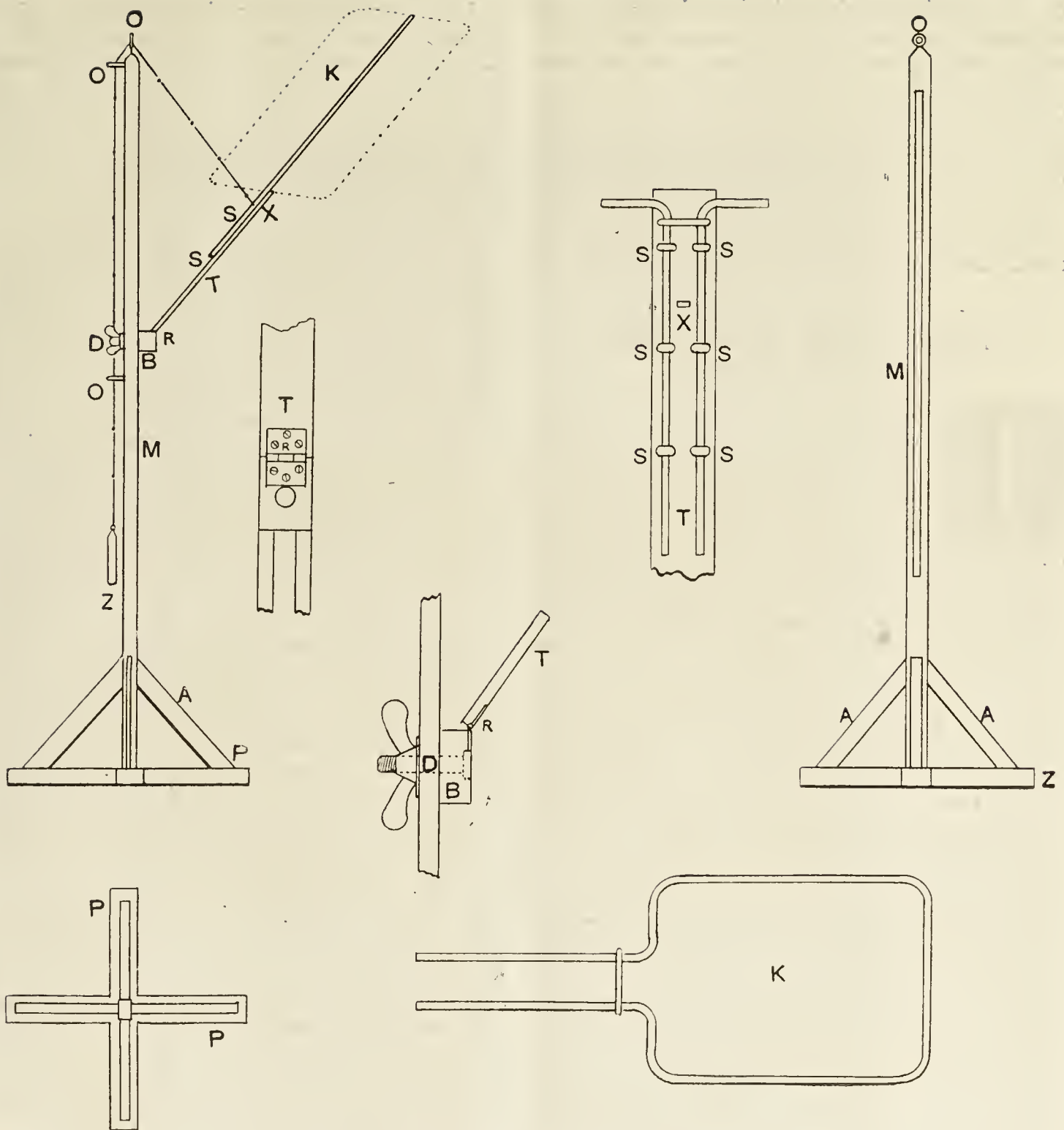
It has been laid down as a general rule that the model should be placed in the centre of the studio,

or at a point where the light can best be concentrated. This principle, excellent enough, has led to great exaggeration, and especially where a studio with a high-pitched roof is in question. For under such circumstances there is present so much light on every side that the resulting portrait is often no better than one taken in the open air. The shadows are annulled by intercrossing reflections, the excess of light contracts the pupils of the eyes, the hair looks as if covered with snow, and the whole composition is insipid and destitute of relief. To modify this excess of top and side light, many expedients have been adopted by different photographers. But they mostly take the forms of curtains or screens which can be drawn to and fro, so that the amount of light thrown upon the sitter may be under some kind of control. Our aim should be to employ a soft and not too diffused a light, by combining in just proportions that from above and that from the side. We must also soften the borders of the shadows, if need be, by delicate reflected light. A general harmony will result from careful efforts in this direction.

M. Klary proceeds to describe and figure the various screens and curtain arrangements which are adopted in different studios, and which, being more or less familiar to English readers, need not receive further mention here. But he has himself designed a portable screen, which he believes will be found to embody all the best points of others, while at the same time it possesses advantages peculiarly its own. As this screen is calculated to be of great service to amateurs, I have thought it desirable to give some diagrams which will make its construction clear. Although designed for use in a studio, it will be seen that it can, with the aid of a background, be made serviceable for out-door work. It will, therefore, be of interest to those who are not so fortunate as to possess a proper studio. I need hardly say that by its aid an ordinary greenhouse could most easily be converted into a studio.

In the annexed diagrams of Klary's screen will be found front and side elevations of the structure, besides a ground-plan, and enlarged drawings of the various details. At first sight the arrangement may appear to be complicated, but examination will show that the contrivance is so simple that any amateur carpenter will find no difficulty in making one. It will be seen that the principal item is a post, M, having along the major part of its length an open groove. For this reason, perhaps the best way to construct it would be to employ three battens, screwed together, but leaving out the centre one where this groove is to occur. The length of the post must be between six and seven feet, and, as will be seen, the plan is of the figure of a cross, for it is furnished at the base with





Elevation, Plan, and Details of Klary's Studio Screen.

four struts, A A, to keep it in an upright position. The various letters in the different diagrams answer to the same parts.

The screen, K, can be put at any height above the sitter's head, and can be fixed at any required angle. This is rendered evident by an examination of the various parts as shown in the annexed diagrams.

It will be noticed that the screen, K, is hinged, R, to a block of wood, B, which, by the help of a screw-nut, D, inserted in that block, can be readily fixed in any part of the grooved upright, M. A

detailed diagram is given which shows the manner in which the frame of K is made of wire, and how the ends of this wire are fastened to the wooden arm, T, by means of staples, S S S S. A cord is attached to this arm at X, which, after running through screw-eyes, O O O, on the main support, has hung to it a counter-weight, Z.

The material of which the screen proper is made must be a matter for consideration. Plain white is said to be the best to soften the light in full-length portraits. But, perhaps, the best plan would be to have two or three screens of different



colours, which could be easily interchanged. One of these should be semi-opaque, and of some non-actinic colour, such a pale red, rose, or pale orange. By such means the advantages of isochromatic plates would be obtainable, for the model would be lighted by a single colour. This would probably add something to the exposure, but the necessity for retouching would be diminished. This head-screen seems to me a very useful appliance, and I trust that some readers of the CAMERA may be induced to give it a trial.

## NOTES FROM NEW YORK.

BY DR. EDWARD L. WILSON.



DO not know that our art is peculiar, or its growth very different from other departments of the world's work; but it seems to me there is a great deal of "spurts and jerks" about it. I am led to this remark by the presence of a pile of "process" engravings—autoglyphs—upon my desk. And the "spurt" on this occasion is the fact that our magazine and book publishers have "caught on" to photo-process engraving a little too soon, or with a little too much expectation. Photography, as you know—bless it—is a most willing and ambitious helper; always ready to come up to anybody's expectations, to fulfil any requirement made of it. At least, it is bound to try. But, in trying, it sometimes produces unworthy results, and then comes the jerk. I think this has been the case, to some degree, in the line of process work. Photography has done much and well, but it has not done as well as it will. The demand for it came before it was quite ready—before its processes were quite perfect enough. As a result we see in our best magazines, not excepting the *Century*, *Scribner's*, and *Harper's*, some work that is rather too bad to publish. The reason is that those who can do such work at all are overcrowded and do not get time to do it well. It is a sort of hot-bed business with them, and their results are therefore decidedly mushy. They appear the more so when placed on pages opposite to the superb wood engravings now given us by our illustrated monthlies. Process-engraving will not do for all sorts of subjects, and it will not come out well from all sorts of negatives, or from every kind of original. If time is not taken to think where the drawbacks are and to correct them, photo-engraving is going to fall into desuetude, as did bromo-gelatin and other dry processes, when it was found that they did not come up to the requirements. The printer has much to learn also, for, as a rule, he "hates process-engravings," and will cry them down whenever he dare.

A recent conversation with the managers of the Art departments of two of the magazines I have named has convinced me that I ought to sound the alarm, so that more thoughtful and careful experiment be given to this branch of our work, so as to insure its greater usefulness and acceptance and position among the means for pictorial reproduction. To know our weakness is sometimes half the way to cure.

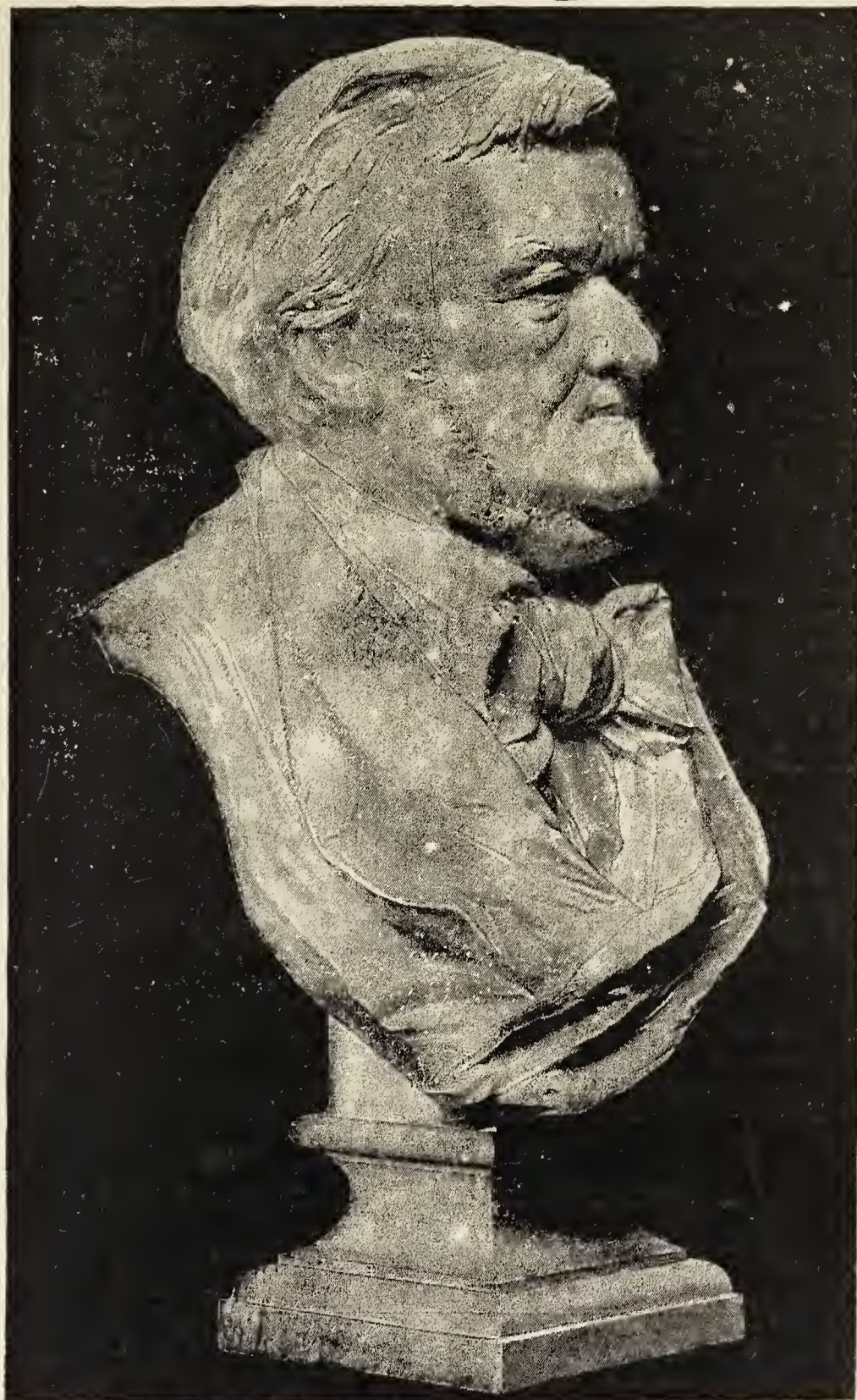
We are all dusting our cameras, tightening the screws in our tripods, and dusting off our holders, making ready for the early appearance of "sweet spring." It don't look much like it this morning, for a "London fog" and a "Scotch drizzle" combined is upon us: about noon they will unite, and combined they will give us an "Irish rain"—after that, sunshine. March has been a great month for weather with us—as many as a score of kinds often coming in one day. But better days are near at hand, and the prospects for business are good. It is true, the cry of "Cheap John" comes in at one ear yet, but it goes out at the other, for I know that many good fellows are maintaining good prices, and many new and splendidly accoutred studios will soon be opened, both here and in various quarters of our outstretched land.

The grand focus of New York at present is at the first combined exhibition of the Boston, New York, and Philadelphia Societies, open at Ortgie's Gallery, 845, Broadway. The opening on Saturday, March 26, was a brilliant affair, and gave satisfaction and pleasure to both guests and interested parties.

At a preliminary examination I had no trouble in concluding that much good fruit would follow such an exhibition as that. There is quite a number of small collections from England, including Messrs. West & Son's yachts, Mr. Cembrano's Derbyshire views and Thames bits; Mr. Richardson's Bournemouth sheep, Mr. Adcock's charming studies, Professor Emerson's seven gems from nature, Mr. Sinclair's views of the Derwent Water region, and Mr. Anty's bits of fishing life on the Tyne, added to which we must not forget the lovely collection of Mr. J. P. Gibson, nor the Scotch beauties of Jessie Gibson, of Glasgow.

I shall endeavour to draw some useful lessons from the entire exhibit for my next letter to the CAMERA. The American collections contain some very excellent examples of portraiture. A charming series of child pictures, with smeared faces, tied-up heads, and disreputably-torn habiliments, by M. A. T. Edge, of Philadelphia, is aptly called the "Rogue's Gallery." As the saying is, we have all been there, and know ourselves how the humour and the pathos of it go. I haven't seen anything for a long time which touched so sympathetic a cord in my development as that collection of little "rogues." It shows the individuality of the artist sure.





WAGNER.

*(Reproduced by the Meisenbach Company at Munich.)*







# PHOTOGRAPHIC PROGRESS IN GERMANY AND AUSTRIA.

BY W. E. WOODBURY.



IN Germany and Austria photography has, without doubt, made remarkable progress during the last few years in its optical, physical, chemical, as well as technical branches. Looking over the records of the past year, I note many improvements in apparatus and processes; and, although it is not necessary to enter into a detailed description of all these various improvements, the most important are, I think, deserving of notice.

In the construction of photographic cameras, everything has been done to combine practicability with compactness. The latest form of detective camera is that manufactured by Stern. This camera is worn under the vest, with the lens protruding from a button-hole. The diameter of this apparatus is 14 centimètres, and breadth  $1\frac{1}{2}$ . Six exposures can be made upon one round plate, each picture being a little larger than a half-crown piece.

In the manufacture of photographic lenses, great efforts have been made to obtain pictures exact as possible and with considerable depth of delineation. Dr. Steinheil made a great improvement in his aplanatic lenses by changing the kind of glass (lighter flint glass), and thus causing them to be considerably more diaphanous. In his new instruments, it is possible to move the front lenses. If the lenses are brought near together, this instrument can be used for groups standing in a half circle; and, if removed, it can be used for taking architecture or other objects upon the same conditions. A lens very much used in Germany is a very strongly-diaphanous portrait lens made by Petzval, in 1840. Professor Abbe, of Jena, has lately announced the discovery of a new kind of glass specially adapted for the manufacture of lenses, and this communication has been received with peculiar interest. To Professor Abbe we owe the remark that in addition to the secondary chromatic aberration of our so-called achromatic lenses, there exists a second defect, termed by him the chromatic difference of the spherical aberrations. This term he made use of to denote the fact that with the crown and flint glasses now used by opticians, though the curves of the lenses be calculated to correct the spherical aberration, taking in each case the mean refractive power, there will be a slight residual spherical aberration for all the rays not of mean refractive index, the lens being spherically under-corrected for red rays, and spherically over-corrected for the blue rays. Realising this fact, Abbe determined to attempt to discover a new kind of glass which should be

free from these defects. Whether these new lenses, made from the glass the result of his researches, will, under the test of experience, fulfil all that the discoverer claims for them has yet to be seen.

Voightländer has of late succeeded in the construction of some very strongly diaphanous eury-scope portrait lenses.

In the matter of improvements in instantaneous shutters, it is almost a matter of impossibility to give an idea of the number of ingenious devices that have been introduced for giving an exposure to the sensitive plate, although many of them are comparatively worthless. Talbot, of Berlin, has recently patented a shutter which is well deserving of notice. Between the two lenses, in the place of the diaphragm, a metal plate moves quickly up and down.

With regard to developers, the oxalate of iron (one part saturated solution of iron, mixed with four parts saturated solution of oxalate of potassium), as first introduced by Dr. J. M. Eder, in 1879, is generally used. Another developer which has found favour is the following potash ammonia developer:—

- 1.—Pyrogalllic acid ..... 6 parts.  
Citric acid ..... 0.5 „  
Sulphite of soda ..... 6 „  
Water ..... 480 „
- 2.—Carbonate of potash ..... 48 parts.  
Water ..... 960 „
- 3.—Bromide of ammonium ..... 2 parts.  
Ammonia ..... 6 „  
Water ..... 960 „

When required for use, equal parts of these three solutions are mixed together. In cold weather it will be found preferable to use a little more of No. 3. This developer gives more detail than the soda formula, and by its means one is enabled to obtain a much denser negative than with ammonia. Dr. F. Seolz recommends the following:—

- A.—Water ..... 200 c.c.  
Pyrogalllic acid ..... 15 grammes.  
Sulphite of soda ..... 100 „
- B.—Water ..... 200 c.c.  
Carbonate of Potash ..... 50 grammes.

In using these solutions it must be remarked that 25 parts of the potash are equivalent to 50 parts of soda, and if we mix one part of A with one part of B, adding six parts of water, we have a very strong developer.

For the development of chloride of silver gelatine plates the acetate developer is greatly to be preferred.

For the prevention of the loosening of the gelatine film from the glass while in the fixing-bath, and for the purpose of hardening the film, Dr. J. M. Eder recommends a solution composed



of one part of hyposulphite of soda solution) one to four), mixed with two parts of a saturated aqueous alum solution. This mixture will very soon become quite cloudy, due to the separation of sulphur and sulphurous acid; but, notwithstanding this, it acts very well.

During the last few months many so-called preliminary baths have been recommended for the purpose of accelerating the appearance of the image with all details. The following will be found the best for the purpose:—The plates are bathed for one minute in a solution of one part of hyposulphite of soda in 5,000 parts of water, washed and placed in the ferrous oxalate developer.

Herr Gaedicke, who has recently made some very interesting experiments in this direction, recommends the addition of one drop of the following solution to every 10 centimètres of ferrous oxalate developer.

Water.....	60 parts.
Crystallised hyposulphite of soda ...	1 part.
Bromide of potassium .....	6 parts.

This solution, besides possessing the advantage of accelerating the development, has the greater advantage of imparting a fine, vigorous character to the negative. Of course, this solution should not be used if over-exposure is suspected; but for instantaneous photographs it is of great service.

Methods of reducing are many, including both mechanical and chemical agencies; but the principal ones in practice are limited to an exceptionally small number. Senhard, of Vienna, introduced a simple mechanical method of reducing the opacity of gelatine films by rubbing with a linen rag steeped in alcohol. On examining the rag, it will be seen to become black. By this means the softness of delineation will not suffer at all.

Dr. Eder employs the following:—

A.—Chloride of iron .....	1 part.
Water .....	8 parts.
B.—Neut. oxalate of potassium	2 parts.
Water .....	1 part.

Both these solutions will keep for a considerable period without deteriorating. Immediately before using, equal parts of A and B are mixed. A bright green solution is formed, which will keep several days in the dark, but decomposes in one day in the light. A little of the mixture is added to a strong solution of hypo. In cases where considerable reduction is required, as much as quarter to half of iron solution should be used with one of hypo. The image when placed in this solution weakens very quickly and uniformly, and will act as well upon plates developed with pyro or oxalate, and, unlike cyanine, it does not destroy the details in the shadows.

For the intensification of gelatine negatives the writer prefers Scolik's formula, which is:—

Mercuric chloride.....	1 part.
Potassium bromide .....	1 „
Water.....	50 parts.

The negative is laid in this solution, and when it has become completely bleached the solution is merely rinsed off, and the whole is immersed in a half-saturated solution of neutral sodium sulphite in water. Here the darkening action slowly and uniformly takes place. Should the negative, however, become too dense, due either to the bleaching process having been carried too far, or the immersion in the sodium-sulphite not having been sufficient to allow the silver chloride to become totally dissolved, the remedy is very simple. Continue the action, and, if deemed necessary, strengthen the sodium-sulphite solution employed. The undissolved chloride of silver can be seen by examining the back of the negative. The advantage of this method is that careful washing between the treatment is not necessary. Furthermore, the intensified plate is very constant, and does not alter during printing, as is very often the case with many of the mercury methods.

For intensifying negatives to be used for photolithography or other similar processes, the following method with bromide of copper will be found effective. The negative is first treated with a solution of bromide of copper until it has become perfectly white. It is then laid in a weak solution of iodide of ammonia, which will turn it to a yellowish green colour. It is again washed and the silver solution applied in the usual manner. This process gives negatives of a much more opaque and less actinic colour than with the bromide of copper alone.

In applied photography very rapid strides have been made by instantaneous artists. The chief of these is undoubtedly Anschütz, of Lissa, who has succeeded in making capital photographs of men and animals in motion, horses jumping, birds flying, &c. Successful attempts were recently made at the works of Krupp, in Essen, to photograph a shot fired from a rifle.

Photogrammetry has received due amount of attention. This method of measuring by means of photography was invented by Meydenhaven in the year 1867, but, on account of certain imperfections in the instruments, it was never universally adopted. Recently, however, Dr. Stolze and other eminent practical photographers have made some very important improvements in this direction, and it is to be hoped that the invention will soon be applied with success.

In Germany and Austria the old albumen process of printing is rapidly being replaced by the far superior methods using collodion or gelatine as



a substratum. With regard to the collodio-chloride of silver method, Liesegang, of Düsseldorf, now brings into the market ready-made chloride collodion and silver collodion in separate bottles, so that all that is required is to combine equal proportions and coat the paper with it. The paper mostly used is that which is coated with baryta, and used for collotype prints. It has a fine, tinted surface, and gives a very good appearance to the prints.

Of the method of printing with gelatino-chloride of silver I gave a description in the CAMERA, under the title of "Liesegang's Aristotype Process." I am very glad to see that this paper can be obtained from Messrs. Hinton & Co., as Englishmen will now have a chance of trying this excellent process. Some little difficulty may, perhaps, be experienced by amateurs in the toning. I will therefore give an extract from an article recently published by Mr. Cronenberg, the well-known photographer of Schloss Grönenbach. He says:—

For toning Aristotype prints, I prefer the following process to any other gold bath, because I obtain very regular results, have the colour under complete control, and never, or exceedingly seldom, have bad prints.

Solution *a*.—Fifteen grains of chloride of gold are dissolved in 80 oz. of distilled or other pure water that contains no lime salts.

Solution *b*.—A saturated solution of fused acetate of soda (not crystals) in water.

These two solutions are used two or three days after their preparation.

For toning 100 cabinet prints I put in a dish 30 good drops of Solution *b*, and 4 oz. of *a*, not otherwise; this mixture must stand for one hour.

I wash the prints in five or six changes of fresh water. Then I introduce two prints, never more, into the toning-bath, face downwards, and rock the dish. As soon as the prints begin to become bluish, I wash them in water and fix. If the prints are allowed to become quite blue, they lose their brilliancy. I fix ten minutes in a solution of 1 oz. of hypo in 4 oz. of water. I never put more than twenty prints into the bath. The fixed prints I wash for two hours in running water.

But by far the simplest method of treatment, in my opinion, is with the new combined toning and fixing bath, made up as follows:—

#### SOLUTION A.

Water .....	24 ounces.
Hyposulphite of soda .....	6 "
Sulphocyanide of ammonia.....	1 "
Acetate of soda .....	1½ "
Saturated solution of alum .....	2 "

Fill the bottle containing this solution with scraps of sensitised paper—waste prints that are not fixed—and allow it to stand for about twenty-four hours in the open air; then filter, and add the following solution:—

#### SOLUTION B.

Water .....	6 ounces.
Chloride of gold .....	15 grains.
Chloride of ammonium.....	30 "

The prints should be printed *a little darker* than is required when finished. They are then taken *direct out of the printing-frame and placed in the bath*, until in looking through the print it appears to have attained the desired tone; remove and wash. Think of those amateurs who detest a multitude of baths and complicity of formulæ! One could hardly imagine anything to be simpler. In my article I recommended placing the prints upon glass previously prepared with powdered chalk, in order to give them a higher glaze. If a ferrotype plate be used, no chalk is required; the prints are merely laid upon it and squeegeed. As soon as dry they will peel off with the high glaze of the plate.

With regard to developed papers, Dr. Just, of Vienna, manufactures a very large quantity, which is of very good quality. Prints upon this paper are made with an automatic exposé, originally invented by Schlotterhoss, by means of which four to five hundred prints can be exposed to either daylight or electric light in one hour. Considerable advancement has also been made in applied photography by the introduction of orthochromatic or isochromatic plates.

The principle of this process is to obtain photographs of objects in their true relative colour-value. For this purpose many dyes are used, dozens of fresh ones being daily recommended.

These dyes, by absorbing those rays which have comparatively little effect upon the ordinary gelatine plate, render the film sensitive to that part of the spectrum. Different dyes have different effects. I shall, therefore, not trouble the reader by naming any of them, or giving any account of the uninteresting controversies and fights for priority which have recently taken place among many of the workers and experimenters with this process. I hope, however, to be able very soon to give an account of the researches of some of these experimenters in a later article. To those who are capable of reading German, I thoroughly recommend Vogel's book, "Die Photographie farbiger Gegenstände in den richtigen Tonverhältnissen," published by Robert Oppenheim, in Berlin. This little work treats upon the application of orthochromatic methods to the collodion and gelatine dry-plate processes, and will be found an exceedingly useful and practical work for the student in orthochromatic photography.

In balloon photography, France takes the lead. Senhard, of Vienna, however, succeeded in making some fine views of the Danube and Prater.

Great progress has been made in microscopic photography. Foremost among the workers in this direction is, undoubtedly, Stenglein, who has recently published a book upon the subject, entitled "Anleitung zur Ausführung Mikrophotographischer Arbeiten"—a praiseworthy treatise,



and well worthy of the close attention of the student. It is published by Oppenheim, of Berlin.

And now we come to photographic printing methods. I feel perfectly justified in saying that hardly a single illustrated book, magazine, or periodical is at present published without the aid, directly or indirectly, of photography.

The process most in use is, of course, photo-zincography, the transfer process, with chromatised gelatine or albumen paper, being used; although many of the largest houses make use of the asphaltum method, by which far greater sharpness of the lines can be obtained.

In producing photo-zincotypes of line-drawing, &c., where no half-tones occur, the matter is easy enough, but the correct representation of the half-tones is another matter entirely. Here it is necessary to break up the surface into lines and dots, so that the picture consists of a grain which by more or less close arrangement represent the half-tones, while, in reality, no half-tones exist. The most successful of these processes is undoubtedly Meisenbach's, some excellent specimens of which have already made their appearance in this journal.

The processes of heliogravure and helio-engraving are also much in use. The reader is, no doubt, familiar with their description, and no very striking improvement has been made recently.

The process of collotype, or, as it is called in Germany, Lichtdruck, has received great attention, splendid work being turned out by the many firms working this process—notably, we will mention Löwy, of Vienna; Otto, of Düsseldorf; and Obernetter, of Munich. Prints are made by this process mechanically, almost equal to silver prints.

Coloured Lichtdrucks are also made, but at present the process is rather an expensive one, the aid of experienced retouchers and draughtsmen being required. From the negative from which the coloured print is to be made a photo-lithographic plate is made of only those parts to print yellow; for instance, all the other parts having been previously stopped out by retouching. Then another plate is made of the blue parts, and so on, according to the number of colours required. The rest of the manipulation is the same as in chromolithography. An admirable little, well-written book upon the Lichtdruck process has been written by the eminent photo chemist, Dr. Julius Schnauss, and is published at Ed. Liesegang's Verlag, in Düsseldorf.

Photographic literature is daily increasing, the latest addition to journalism being the new paper for amateurs—the only one of its kind published in Germany. It is called *Der Amateur Photograph*, and is published at Liesegang's Verlag. It is replete with useful and practical information for the amateur.

## DEVELOPMENT OF LANTERN SLIDES WITH PYRO.

BY F. C. BEACH.

(Read before the Society of Amateur Photographers of New York).



CONSIDERABLE progress has been made lately in the development of lantern slides with the pyro developer, which seems to prove that it is possible to make one developer answer for negatives and positives, and dispense altogether with the necessity of the iron developer.

From a series of experiments I recently made on Carbutt's A plates, I learned that it was only necessary to use a very weak developer to obtain excellent slides of the proper density. I placed the negatives at a distance of 24 inches from a Carbutt lamp and exposed (the sensitive plate being in contact with the negative in a frame) from 15 to 45 seconds, according to the density of the negative. I developed four plates at a time in one  $6\frac{1}{2} \times 8\frac{1}{2}$  tray, and used the ordinary Beach developer, as follows:—

Pyro solution .....	40 minims.
Potash solution .....	30 „
Water .....	3 ounces.

The development proceeds very slowly, which is desirable, and takes about ten to fifteen minutes, and it is advisable to make the blacks much darker than they should be, otherwise they will fix out too flat and thin in the hypo solution. The developer should be used fresh each time. I obtain very clear high lights, without the use of any after clearing solution, although I have no doubt it is desirable to employ it. If the developer stands too long, or is used a second or third time, it is liable to give the high lights a very slight yellow tinge. I may say several members of this society are developing slides with pyro very successfully, and their experience, together with my own, and that which I learn has been tried elsewhere, leads me to the conclusion that it is going to be the simplest and easiest method for making lantern-slides. If amateurs knew that they could use the same negative developer for lantern-slides, more of the latter would be made. I do not object to the colour of potash-slides; if the exposure is nearly correct, it will be a dark brown. It is the sulphite of soda and sulphurous acid in the developer which prevents the pyro from staining the plate, and they thus play a most important part.

If the plate is under-exposed, you are not limited as with iron, but can secure a passable slide by the addition of more potash.

Then, again, the density of the slide is easily regulated; if you wish it to be very thin, suitable



for a weak oil lantern, simply decrease by one-half the amount of pyro solution.

If you wish a purple tone, develop with only 10 minims of the pyro solution to 3 ounces of water; and, after fixing and washing thoroughly, slightly intensify with bichloride of mercury and cyanide of silver solution (or Monckhoven's intensifier).

To obtain a brown tone, according to Mr. Alvey A. Ade, add three or four drops of the following solution to the developer:—

Citrate of soda ..... 50 grains  
Water..... 1 ounce,

and slightly over-expose.

## Correspondence.

—o—

### AN AMATEUR PHOTOGRAPHIC EXHIBITION.

*To the Editor of the CAMERA.*



IR,—We are being daily asked by amateur photographers as to when and where we intend holding our third annual Exhibition. That the Exhibitions held by this Company have done much to promote and extend the popularity of the art amongst amateurs is universally admitted by the press. Owing to the amount of trouble and expense entailed, we are constrained to abandon an Exhibition in Bond-street this year; but not wishing to disappoint those amateurs who look to us for an annual competition, we would ask your co-operation in their interests in the following project.

We would ask you to consent to act as judge and award prizes in a competition which we shall offer through your columns, as we feel assured that in asking you to adjudicate we shall be acting in conformity with the wishes of the amateur photographic world. Subject to further developments, our proposals are briefly:—

That a prize competition, called the London Stereoscopic Company's, be held in October.

That all pictures intended for competition should be sent to your care.

That as a guarantee of impartiality our Company will take no voice in the judging. The nomination of two other judges to assist the Editor in his task shall be made by the amateurs themselves.

That the prize pictures shall be exhibited in October to the public, either at the Company's galleries in Regent-street or elsewhere.

The prizes we propose placing in your hands to be awarded in this competition will consist of a sum of £50 in cash, two gold medals, twelve silver, and fifty bronze.

We have further decided to make a charge of half-a-crown, by way of entrance-fee, to all amateurs competing, which sum will be handed over *in full* to the treasurer of the "Photographers' Benevolent Association," a charity which we feel assured our amateur friends will be only too willing to assist us in supporting.

It is proposed to compile an album of the prize prints, which it is hoped her Majesty will be graciously pleased to accept, as she did on the occasion of our last Exhibition. This album will, as heretofore, be issued to subscribers.

We would propose that the various classes remain much as they did in the former Exhibitions, but before finally making arrangements we would invite suggestions from amateurs themselves as to any improvement or modification of former arrangements.

The various details as to classes, prizes, regulations for exhibitors, dates for sending in, &c., &c., will be published early in May by the Company, and will be sent in to all applicants.

All inquiries addressed Manager of Stereoscopic Company's Competition, 110, Regent-street, will receive prompt attention.—We are, sir, yours truly,

THE LONDON STEREOSCOPIC AND PHOTOGRAPHIC COMPANY (LIMITED).

London: 108-110, Regent-street, W.

April 2, 1887.

[We refer to this matter on the first page of our present issue.—*Ed. CAMERA.*]

### GAS-REGULATING APPARATUS FOR LIMELIGHT.

*To the Editor of the CAMERA.*

DEAR SIR,—Will you allow me to criticise the form of gas-regulating apparatus for the limelight, which you propose and illustrate in this month's *CAMERA*?

I would venture to submit that no pressure regulator, working by the variation of that which it is intended to preserve invariable, can work in "the most perfect manner."

I know that ordinary gas-governors, and many other instruments, act on this principle, and, when properly designed, are practically successful; but I think that your arrangement would fail through the friction of its parts.

In order to effect a reduction of the supply from the cylinder, the pressure of gas in the bag must rise sufficiently to overcome the weights and the friction of the levers and valve; and in order to increase the supply from the cylinder, the pressure must fall sufficiently to allow the weights to overcome this friction. And the difference between the respective pressures necessary to turn on and to turn off the gas, would represent the sensitiveness of the apparatus.

Reduction of friction is a most important element in the success of all governors working by that which they are intended to prevent. Of course, your arrangement might be made sensitive by using a valve with a very easily-fitting screw, or by employing a large bag; but loose screws tend towards leakiness, and large bags would be better used alone.

I will not deny, however, that, if carefully arranged, your apparatus might regulate oxygen roughly for a safety jet; but I have never seen any such governors which would control the gases for a mixed jet, or regulate the mixture.

In the case of working a mixed jet from two cylinders of oxygen and hydrogen, each fitted with a governor, any variation of pressure in the jet affects first the governor offering least resistance to motion. The pressure of gas is maintained constant, but the



proportion of the mixture is quite out of control. And it is impossible to adjust the governors so that they will act together. The slightest shaking of one would free it before the other.

Your arrangement also does away with the safety of the simple compressed gas system when used for mixed jets; indeed, the proposal appeared to me positively dangerous, until I reflected that few persons had two cylinders and two bags at liberty for the experiment.

The subject is one I have long taken an interest in, and studied, and I have never yet seen any form of governor which is more effective than the simple cylinder and valve properly designed and worked.—  
Yours faithfully,  
W. TAYLOR.

Slate-street Works, Leicester,

April 15, 1887.

[The Editor thanks Mr. Taylor for the above letter, but he cannot agree with the statement regarding the use of the mixed jet served from bottles and governors. Theoretically, there may be objections; but there are none practically. The Editor was the first to make public use of Oakley & Beard's governor for gas bottles; and although his lantern operator was unacquainted with the apparatus, he found no difficulty in obtaining a splendid light. This would have been impossible if, as Mr. Taylor states, the proportion of the mixture (of gases) is with such an arrangement beyond control. The plan described in last month's CAMERA is but a modification of the same principle as Oakley's, for in both cases small indiarubber bellows are filled from cylinders at greater pressure—a pressure more than sufficient to overcome any friction that is likely to occur.]

## Reviews.

*La Photographie Astronomique.* By ADMIRAL MOUCHEZ. (Paris: Gauthier-Villars.)



HIS little book, by the talented director of the Paris Observatory, comes at an opportune time; for, just after its appearance, an International Convention has met at the French capital to decide upon the best means of executing a complete chart of the world of stars by means of photography. As our readers know, the French have taken a leading part in astronomical photography, and this book is destined to acquaint the public with what has really been going forward in this comparatively new field of research. Certainly nothing more wonderful, even in this age of scientific wonders, was ever put before public notice than an announcement of the fact that the camera can photograph stars which have never been seen, and never will be seen, by the eye of man, even when aided with the most powerful telescopes. Here is a text, indeed, upon which a far-reaching discourse could be elaborated. Admiral Mouchez has, therefore, an account to give of much-wonder-working apparatus, and he has done his work well. His remarks are illustrated by woodcuts and photographs of extreme interest. The latter include photographs of different portions of the lunar surface, a photo-

micrograph of a part of a star negative, and photographs of cloud-belted Jupiter and ring-girdled Saturn. We cordially welcome this, the first book upon stellar photography.

*A Photograph and How to Take It.* By A. A. WOOD (E. G. Wood, 74, Cheapside, E.C.)

IT has apparently become necessary for every dealer in photographic materials to issue a book of instructions for beginners in the art. Mr. Wood's pamphlet of twenty-two pages by no means falls short of others of its class. The instructions given are clearly written and are reliable.

*Harmonious Colouring as applied to Photographs.* (Jas. Newman, 24, Soho-square, London.)

THIS useful little manual has now reached its fourteenth edition. It is well and concisely written, but we must point out one omission, which is a serious one. During the past two or three years the majority of enlarged photographs have been done on bromide paper. For finishing such pictures special treatment is necessary, and papers have been read before the various societies, in London and the provinces, dealing with this comparatively new departure in photography. In this manual the new paper and its peculiar characteristics are dismissed with half-a-dozen lines. We notice also that, in the chapter on painting transparencies for the lantern, directions for working in water-colours are given, without any mention of one main difficulty. Most transparencies made in these days are on gelatine plates, and it need hardly be pointed out that, if the gelatine surface is treated to washes of water-colour, it will swell up into ridges, and the picture will be spoilt. The book has so much good matter in it that it seems a pity that these blemishes should have been overlooked.

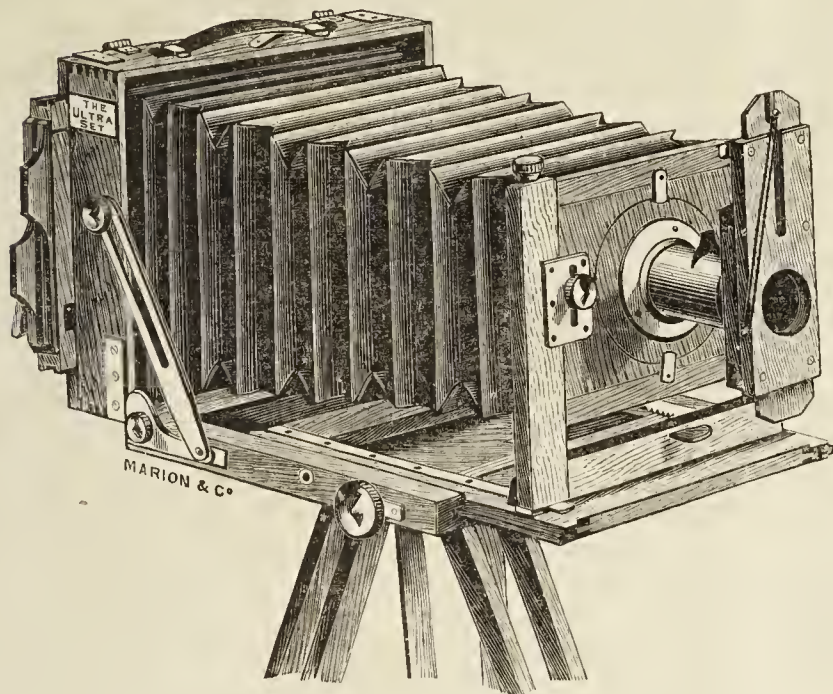
*Photography of Bacteria.* By E. M. CROOKSHANK, M.B., F.R.M.S. H. K. Lewis, London.

THIS is a book which will be found interesting alike to the physician, the physiologist, and the photographer. To the two first because it shows what a wonderful power Photomicrography places in their hands, in the correct delineation of forms which are only visible by the aid of the microscope; and to the latter because the art of taking such photographs is described in a clear and common-sense manner. The book is illustrated by no fewer than eighty-six photographs reproduced in autotype, and half of these are in various tints, imitating the staining of the original preparations from which the negatives were taken. Dr. Crookshank uses the limelight for his work, and his remarks relative to the conveniences afforded by this method of illumination we can from experience heartily endorse. Those of our readers who are wishful to take up this interesting branch of photographic work, and would seek to know the best methods of wedding their cameras with microscopes, cannot do better than refer to this book. Its contents comprise a good historical sketch, a valuable chapter on the opinions of eminent men as to the merits of photography for this class of work, a detailed description of apparatus, full directions for practical manipulation, and descriptive notes of the autotype reproductions above mentioned. It is a minor feature of the work, but a very useful one, that in the list of illustrations the power employed in taking the negative, the degree of magnification, and other particulars belonging to each, are duly set forth.



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THESE Sets will be found of exceptionally good value. The Cameras are substantial and of good workmanship, and with the Lenses excellent portraits, views, and groups may be made

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For Plates  $6\frac{1}{2} \times 4\frac{1}{4}$ .

Best Finish Mahogany, Leather Bellows Camera—the lightest and most compact Camera made—Double Extension, Rack Adjustment, Swing Back, Rising Front, Reversing Frame, 3 Double Book-Backs with Spring Shutters, good Rectilinear Lens, Instantaneous Shutter, and superior Folding Tripod.

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Camera, 3 Backs, Lens, Shutter, and Tripod, as described in Ultra Set for Plates  $6\frac{1}{2} \times 4\frac{1}{4}$ .

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Good Mahogany Camera, Leather Bellows, no loose parts, very light, folding into small compass, and with Leather Handle, Rack and Pinion Adjustment, Reversing Frame and Swing Back, good Rectilinear Lens, fitted with Instantaneous Shutter, and a good strong threefold Tripod.

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Well-made substantial Mahogany Folding Camera, with Screw Adjustment, Reversing Frame, Double Swing, Sliding Front, Double Dark Slide, good Rectilinear Lens, fitted with Instantaneous Shutter, and a good strong Sliding Tripod Stand.

Price complete, £5. 15s.

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For Plates  $8\frac{1}{2} \times 6\frac{1}{2}$ .

Camera, Double Back, Rectilinear Lens, Instantaneous Shutter, and good strong Tripod, as described in the Unique Set for Plates  $6\frac{1}{2} \times 4\frac{1}{4}$ .

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Strong Mahogany Folding Camera, with Rack and Pinion Adjustment, good View Lens, fitted with Shutter and a good strong Sliding Tripod.

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Well-made Cheap Camera, 1 Double Back, Single View Lens, and Tripod.

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Comprising—Strongly made Mahogany Bellows Body Camera, very long Focus, Screw Adjustment, Double Swing Back, new Front Sliding Adjustment, and fitted with six of Marion's Patent Compacta Envelopes—the lightest, cheapest, and most compact form of Slide made. Rectilinear Lens, Instantaneous Shutter, and good strong Folding Tripod.

Price complete, £4. 15s.

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For Plates  $6\frac{1}{2} \times 4\frac{1}{4}$ .

Camera, 6 Backs, Lens, Shutter, and Stand, as described above for Union Set.

Price complete, £6. 4s.

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For Plates  $8\frac{1}{2} \times 6\frac{1}{2}$ .

Camera, 6 Backs, Lens, Shutter, and Stand, as described above for Union Set.

Price complete, £9.

### THE UTILITARIAN.

For Plates  $6\frac{1}{2} \times 4\frac{1}{4}$ .

Leather Bellows Camera, 1 Double Back, Single Lens, and Tripod.

Price complete, £3. 10s.

### THE UNIVERSAL.

For Plates  $5 \times 4$ .

Strong Camera, 1 Double Back, Single View Lens, and Tripod.

Price complete, £2. 2s.



## Answers to Correspondents.

*[This column is free to correspondents of THE CAMERA. Questions should be clearly written, on one side of the paper only, and should reach the Editorial Office not later than the 18th of each month.]*

W. W. HOLLINGSWORTH, Prussia.—Both the pictures which you send are of high quality, and we thank you for them. We have addressed a letter to you by post.

J. G. BARTEL, Nelson, New Zealand.—1. The instrument referred to is merely a camera with a finder at the top, and a quick shutter acting upon the lens. It is held in the hands level with the eye. 2. This is another name for "Collotype," which is described in most of the text-books. 3. We do not think that the work is now in print. Thanks for your good opinion of us.

OMEGA.—If simple pyro and ammonia be used, rocking the dish certainly adds to chances of discolouration, although it may hasten development. If you will refer back to page 71, you will notice some remarks corroborative of yours about yellowness of soda-developed plates, and a remedy which will cure them.

F. A. W. W.—1. Mark the ground-glass with a pencil, while you place one of your new carriers upon it as a guide. 2. Either of the lenses named will do for what you want. They are both thoroughly reliable and rapid.

S. D. D. (Lyndhurst).—Where water is scarce there is nothing better than the tank with upright grooves for holding negatives while washing, for the hypo-salt sinks to the bottom by gravity, and the negatives are freed from it with very few changes of water.

HOPE.—Soak the pieces of glue in cold water for a couple of days. This will cause it to swell up into a thick gelatinous mass, which can easily be dissolved by heat. It will require no water to be added to it, and will be just of the right consistence for the use you indicate.

INDIGO.—The gelatinous surface of bromide paper allows of colouring in oils, for the gelatine corrects the natural porosity of the paper. But an artist would much prefer canvas to work upon, for the latter has a grain, or tooth, which is pleasant to the worker, and which will afford certain effects which are almost impossible on a smooth surface. There is the same analogy between writing-paper and rough drawing-paper.

CARDIFF AMATEUR PHOTOGRAPHIC SOCIETY.—The monthly meeting of the above Society was held on the 5th inst., S. W. Allen, Esq., in the chair. The election of Messrs. A. E. Evans, Powis, and G. H. Wills as ordinary members was confirmed. The Society are indebted to Mr. D. Josti for a promised lecture on the 27th inst., on "Retouching," concluding with remarks on Rembrandt and Doré pictures. The Society's weekly excursions for May have been arranged as follows:—May 7th, Aber Valley; May 14th, Treforest; May 21st, Llandaff; May 28th, Cardiff Castle. The latter will be subject to permission.

WE have lately had the opportunity of trying a new metal dark slides, invented and patented Mr. Tylar, of Yates-street, Birmingham. They are light, compact, unbreakable, and very cheap. They have also the advantage of being damp-proof, there is nothing about them which can affect the plates, even if such plates be left enclosed in them for weeks or months. As much cannot be said of the ordinary wooden backs, which, under similar circumstances, will sometimes play strange tricks with the sensitive films inside.

MESSRS. JAMES LANCASTER & SON'S new Catalogue of Photographic Apparatus has just reached our hands. It gives particulars of the varied forms of ingenious cameras which have been brought out by this enterprising firm. One of these, illustrated by a woodcut, is the Watch Camera, which, although of the form and size of an ordinary watch, will take a photograph by the touch of a trigger. It may be mentioned that amateurs who are clever enough to fit up cameras for themselves will find in this catalogue illustrations and prices of the screws, hinges, and other odds and ends required for such work.

A WORD FROM NATAL.—"The advent of the dry plate or the (so-called) 'instantaneous' process has no doubt greatly misled the uninitiated, as many think that all things now are possible. This is a great mistake. There is really no such thing, in a commercial sense, as 'instantaneous' work. I have pictures in stock that have been taken in the one-third of a second; but the average exposure for outdoor work is from one and a half to three seconds, if rich and brilliant prints are to result, and the whole of the picture sharp and crisp—to obtain which (the latter) the lens must be stopped down sufficiently until the middle and foreground of the picture, at least, are in sharp focus, and this means longer exposure, and the destruction of the theory of instantaneous work. Such being the case, I opine it will be patent at once to the considerate that the introduction into a picture of all the domestic animals and youthful members of a family tends greatly to handicap the photographer. The house and foliage, with its deep shadows, will necessitate careful focussing and stopping down of the lens, and a good exposure of some two, three, or four seconds. But Master Harry and Miss Jane, who are ever on spring wires from morning to night; Fido, with his colony of tormenting fleas; the riding and carriage-horse fresh from the stable, and instantly the prey of the vulture-like flies; or Neddy, the donkey, whose ears and tail are never still—all these are subjects for the quickest of plates, lenses, and exposure. And where any of these, or all of them, are brought into a picture (as I have had them brought), a serious and difficult problem is produced that all the algebra I know, or ever knew, fails to solve. As a whole—house, grounds, and the accessories just mentioned—a perfect result is impossible, save only by a fluke or photographic miracle. Separately, justice could be done to each. Quick pictures at any time are a mistake, where a full exposure can be obtained; and I attribute my present success to finding this out and strictly adhering to it. I have plates in stock that would give me pictures in the one-sixtieth of a second, but when using them I invariably give them two or one-and-a-half seconds, even for horses."—G. T. Ferneyhough.



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